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AIRLINE MODEL

05WG-3031A

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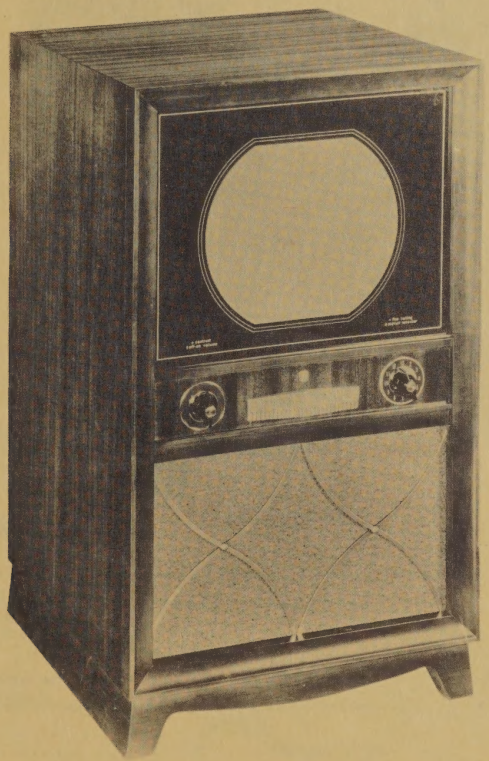

AIRLINE MODEL

05WG-3031A

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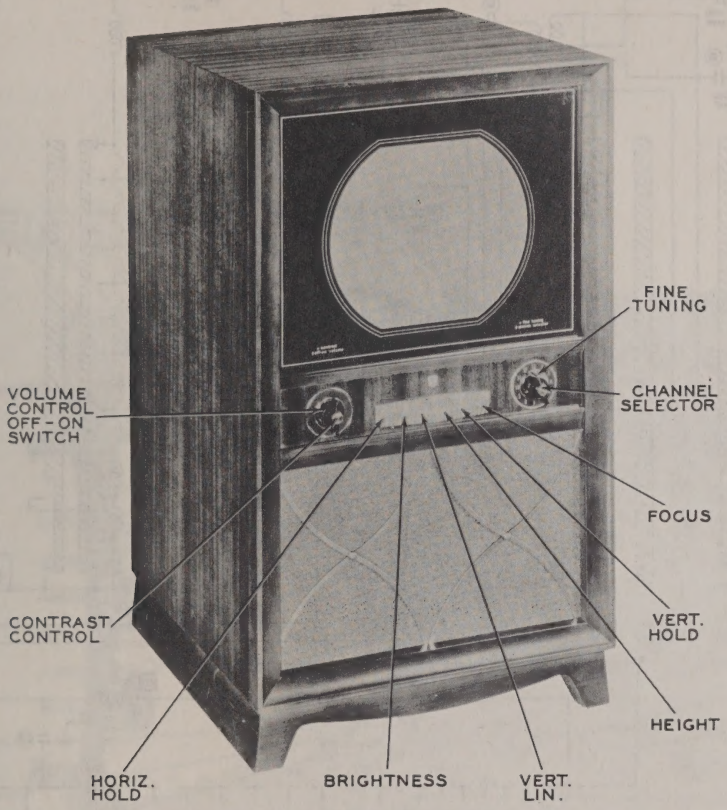
AIRLINE
MODEL 05WG-3031 A



AIRLINE
MODEL 05WG-3031 A

TRADE NAME	Airline, Model 05WG-3031A
SUPPLIER	Montgomery Ward Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty Two
POWER SUPPLY	105-125 Volts AC 60 Cycle
RATING	1.9 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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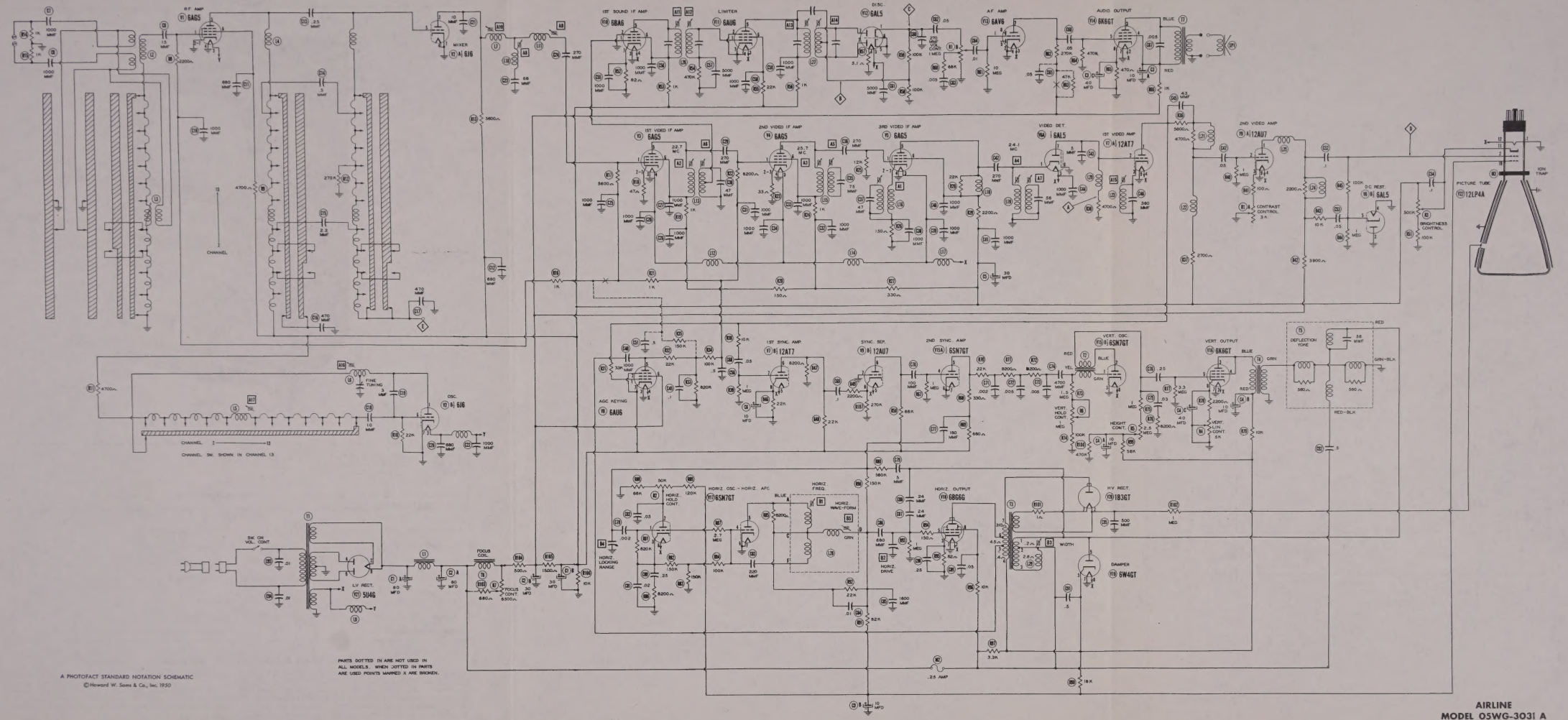
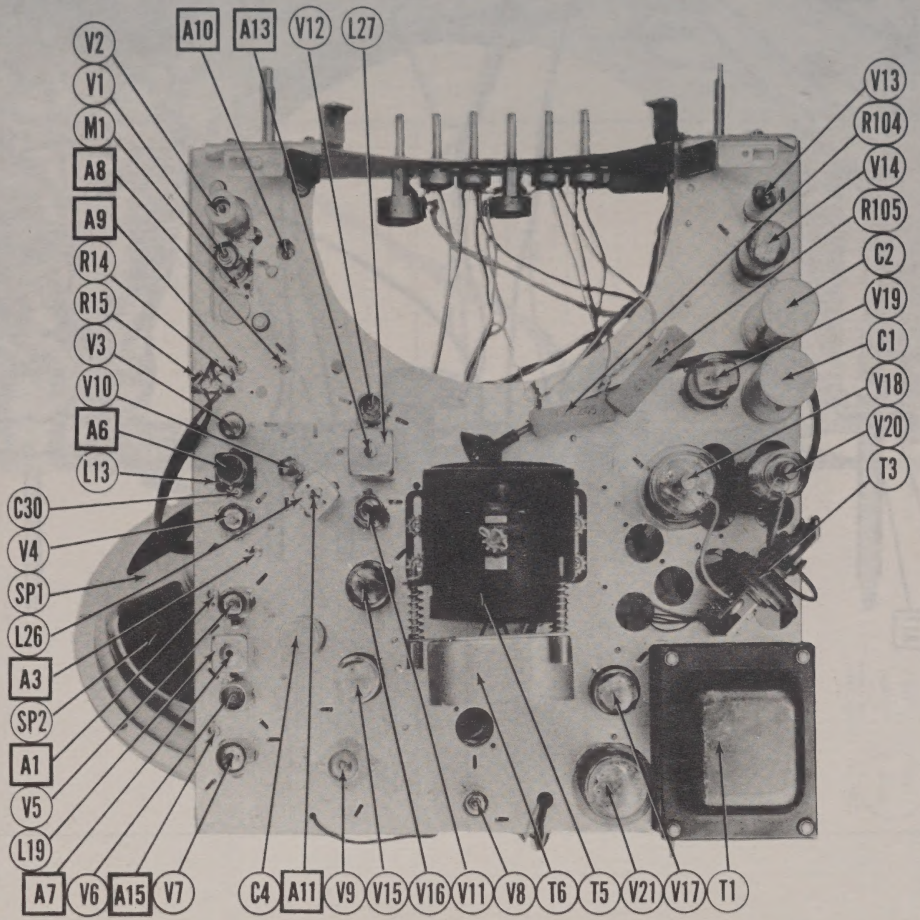
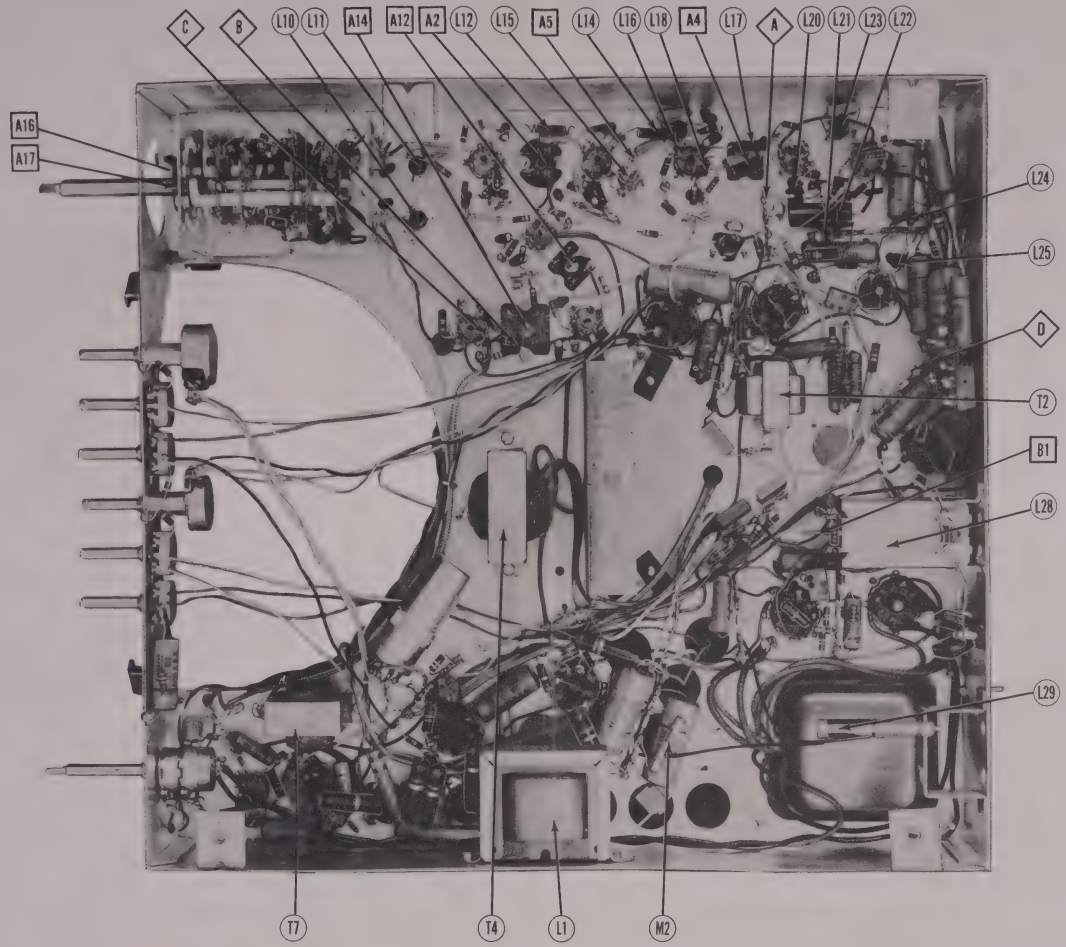


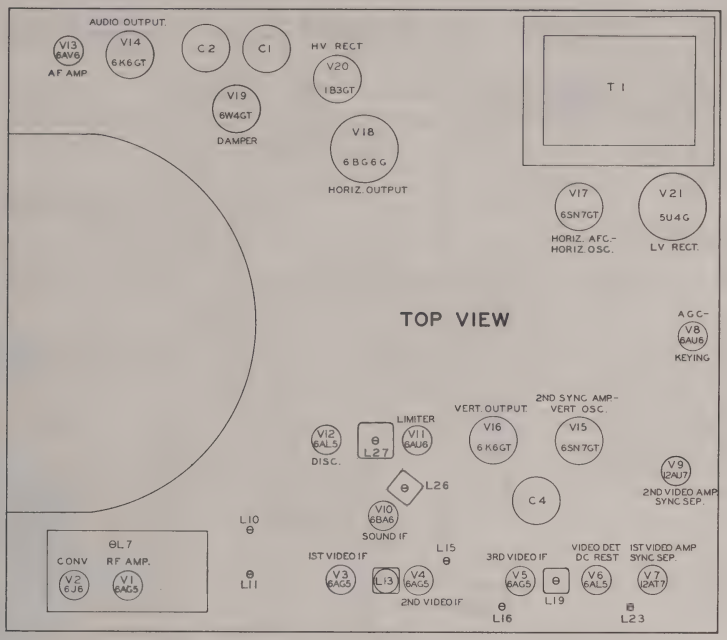
AIRLINE
MODEL 05WG-3031 A

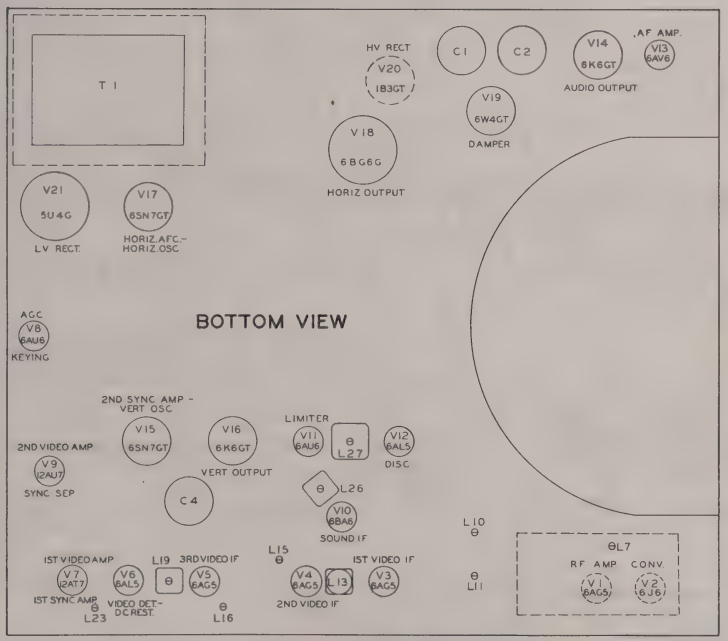


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the picture tube is to be removed while alignment is being performed the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect a 10KΩ resistor in series with the vertical amplifier input lead and a 5000MMF capacitor across vertical amplifier terminals. This receiver uses one of two tuners, a switch type tuner and a turret type tuner, determine which tuner is used before attempting alignment. Frequencies used for the switch type tuner will be designated by an asterisk (*) and the frequencies used by the turret type tuner will be designated by a dagger (†). If a turret type tuner is used omit step 7.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	20.2MC (Unmod.)	Any	Use VTVM. DC Probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	Direct	"	"	22.7MC	"	"	A2	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -2 volts reading.
3.	Direct	"	"	25.7MC (Unmod.)	"	"	A3	Adjust for maximum deflection.
4.	Direct	"	"	24.1MC * (Unmod.) 23.7MC † (Unmod.)	"	"	A4	"
5.	Direct	"	" "	27.7MC (Unmod.)	"	"	A5	Adjust for MINIMUM deflection.
6.	Direct	"	"	21.7MC (Unmod.)	"	"	A6, A7	"
7.	Direct	"	"	17MC (Unmod.)	"	"	A8	"
8.	Direct	"	24MC (10MC SWP)	21.7MC 26.2MC	"	Vert. Amp. thru detector probe as shown in fig 1 to pin 5 (plate) of 6AG5 (V3). Low side to chassis.	A9, A10,	Short AGC line to chassis. If switch type tuner is used adjust A9 and A10 for response curve similar to one shown with solid line in figure 2. If turret type tuner is used adjust A10 for response curve similar to one shown with dotted line in figure 2. A SLIGHT readjustment of A8 may be required to obtain optimum results.
9.	Direct	"	"	21.7MC 22.4MC 26.2MC	"	Vert. Amp. to Point (A). Low side to chassis.		Connect negative terminal of a 3 volt battery to junction of R21 and C31 and positive terminal to chassis. Check for response curve similar to figure 3. If necessary, SLIGHTLY retouch A2, A3 and A4, A6 and A7 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.7MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A11, A12, A13	Adjust for maximum deflection.
11.	Direct	"	"	"	DC Probe to Point (C). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 % modulation and 450KC sweep. Use 120 % sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.7MC (450KC SWP)	21.7MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A11, A12, A13	Adjust for maximum amplitude and symmetry as per figure 4.
11.	Direct	"	"	"	"	Vert. Amp. thru 10KΩ to Point (D). Low side to chassis.	A14	Adjust A14 to place 21.7MC at center of crossover lines as per figure 5. Slightly retouch A13 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe thru detector probe as shown in figure 1 to point (D). Low side to chassis.	A15	Adjust for minimum deflection.

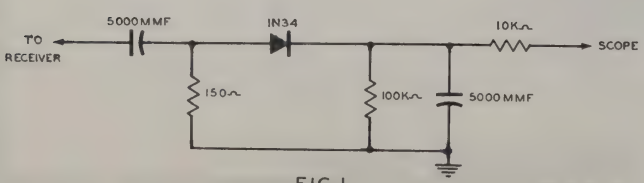


FIG.1

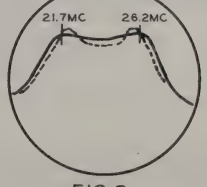


FIG.2

OSCILLATOR ALIGNMENT (SWITCH TYPE TUNER)

Remove dummy converter tube and replace the original 6J6 in its socket.
The RF and mixer portions of this receiver are pre-set at the factory and should not require adjustment in the field.
The signal generator output lead should be terminated with its characteristic impedance usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215.75MC	13	DC Probe to Point (C). Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	"	"	209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC	12 11 10 9 8 7	"		Check to see if a zero reading can be obtained well within the range of the fine tuning control. If not, a compromise adjustment of A16 will be required.
15.	"	"	87.75MC	6	"	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
16.	"	"	81.75MC 71.75MC 65.75MC 59.75MC	5 4 3 2	"		Check to see if a zero reading can be obtained well within the tuning range of the fine tuning control. If not, a compromise adjustment of A17 will be required.

RF AND MIXER ALIGNMENT (TURRET TYPE TUNER)

The sweep generator output lead should be terminated with its characteristic impedance usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. to Point (E). Low side to chassis.	A18, A19, A20	Adjust for response curve similar to figure 6 with markers above 80%.
18.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to figure 6. If markers fall below 70% on any channel make slight adjustment of A18 and A19 and A20 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT (TURRET TYPE TUNER)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Set the fine tuning control to the mid-position of its range.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A21.
It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A21 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channel that is off frequency. The individual channel oscillator adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point (C). Common to chassis.	A22	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A23	
			203.75MC	11		A24	
			197.75MC	10		A25	
			191.75MC	9		A26	
			185.75MC	8		A27	
			179.75MC	7		A28	
			87.75MC	6		A29	
			81.75MC	5		A30	
			71.75MC	4		A31	
			65.75MC	3		A32	
			59.75MC	2		A33	

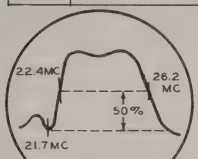


FIG. 3

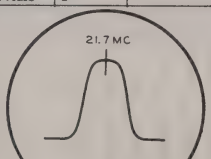


FIG. 4

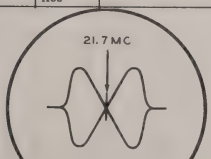


FIG. 5

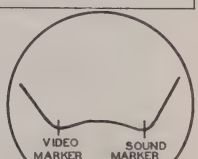


FIG. 6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1VDC	0V.	6.3VAC	0V.	130VDC	125VDC	0V.		
V 2	6J6	90VDC	100VDC	6.3VAC	0V.	-1.4VDC	§-5.5VDC	0V.		
V 3	6AG5	-1VDC	.4VDC	0V.	6.3VAC	110VDC	120VDC	.4VDC		
V 4	6AG5	-.9VDC	.2VDC	6.3VAC	0V.	115VDC	115VDC	.2VDC		
V 5	6AG5	-.2VDC	1.2VDC	6.3VAC	0V.	110VDC	110VDC	1.2VDC		
V 6	6AL5	0V.	0V.	6.3VAC	0V.	1VDC	0V.	-.3VDC		
V 7	12AT7	90VDC	-.3VDC	0V.	6.3VAC	6.3VAC	33VDC	-.8VDC	.8VDC	0V.
V 8	6AU6	▲-40VDC	▲0V.	0V.	6.3VAC	▲-115VDC	▲140VDC	▲0V.		
V 9	12AU7	260VDC	0V.	12VDC	6.3VAC	6.3VAC	130VDC	0V.	11VDC	0V.
V 10	6BA6	0V.	0V.	0V.	6.3VAC	115VDC	115VDC	1.3VDC		
V 11	6AU6	-.4VDC	0V.	6.3VAC	0V.	125VDC	90VDC	0V.		
V 12	6AL5	0V.	-.8VDC	6.3VAC	1.6VAC	0V.	0V.	-.8VDC		
V 13	6AV6	-.5VDC	0V.	6.3VAC	0V.	0V.	0V.	90VDC		
V 14	6K6GT	0V.	6.3VAC	235VDC	250VDC	0V.	0V.	0V.	15VDC	
V 15	6SN7GT	-13VDC	110VDC	0V.	-1.2VDC	120VDC	0V.	0V.	6.3VAC	
V 16	6K6GT	33VDC	6.3VAC	380VDC	380VDC	-.2VDC	0V.	0V.	50VDC	
V 17	6SN7GT	-11VDC	100VDC	-9.4VDC	-55VDC	205VDC	0V.	0V.	6.3VAC	
V 18	6BG6G	0V.	6.3VAC	6.5VDC	265VDC	-14VDC	-14VDC	0V.	265VDC	TOP CAP *
V 19	6W4GT	0V.	0V.	460VDC	0V.	370VDC	-14VDC	0V.	6.3VAC	
V 20	1B3GT	* DO NOT MEASURE.								
V 21	5U4G	0V.	380VDC	0V.	400VAC	0V.	400VAC	0V.	380VDC	
V 22	12LP4A	0V.	.5VDC	PIN 10 385VDC	PIN 11 130VDC	PIN 12 6.3VAC				

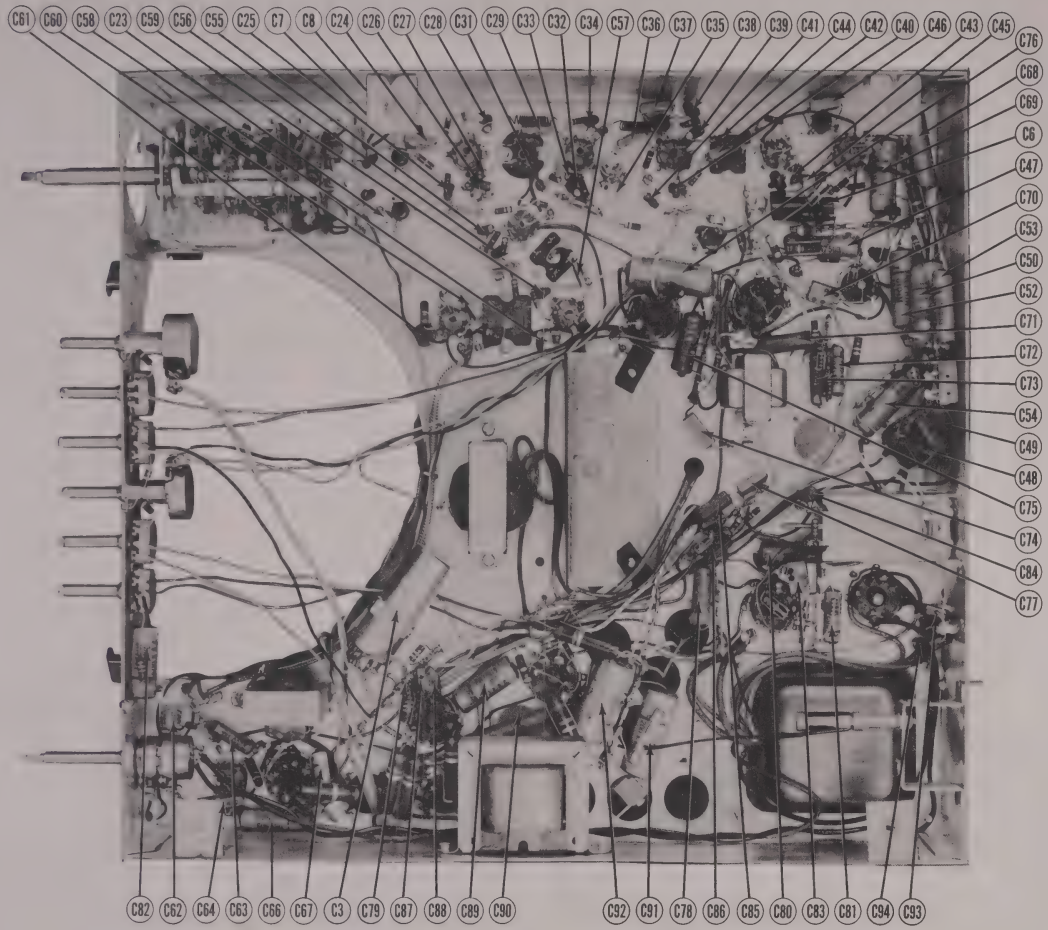
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
▲ MEASURED FROM JUNCTION OF R106 AND C1B.

RESISTANCE READINGS

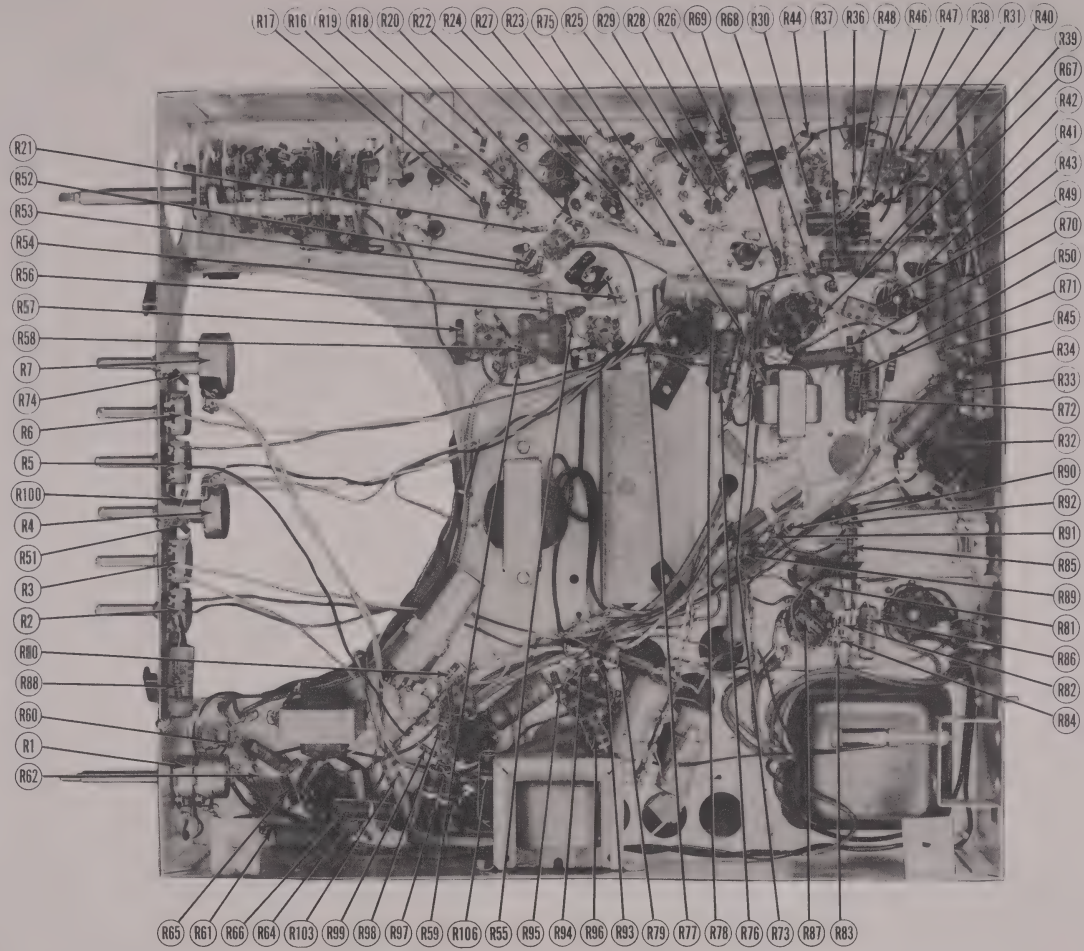
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	925KΩ	0Ω	.1Ω	0Ω	†2000Ω	†7000Ω	0Ω		
V 2	6J6	†8000Ω	†9000Ω	.1Ω	0Ω	270KΩ	22KΩ	0Ω		
V 3	6AG5	925KΩ	47Ω	0Ω	.1Ω	†3.8KΩ	†3.8KΩ	47Ω		
V 4	6AG5	930KΩ	33Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	33Ω		
V 5	6AG5	12KΩ	150Ω	.1Ω	0Ω	†4.5KΩ	†4.5KΩ	150Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1 Meg.	0Ω	4.7KΩ		
V 7	12AT7	†11KΩ	4.7KΩ	.4Ω	.1Ω	.1Ω	†13KΩ	1 Meg.	22KΩ	0Ω
V 8	6AU6	†44KΩ	†2.3KΩ	0Ω	.1Ω	840KΩ	†850Ω	†2.3KΩ		
V 9	12AU7	†4.8KΩ	1 Meg.	3.1KΩ	.1Ω	.1Ω	†70KΩ	0Ω	270KΩ	0Ω
V 10	6BA6	0Ω	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 11	6AU6	470KΩ	0Ω	.1Ω	0Ω	†3.3KΩ	†24KΩ	0Ω		
V 12	6AL5	200KΩ	100KΩ	.1Ω	2.7Ω	0Ω	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	.1Ω	0Ω	Inf.	Inf.	†270KΩ		
V 14	6K6GT	Inf.	.1Ω	†2.2KΩ	†1.8KΩ	470KΩ	Inf.	0Ω	470Ω	
V 15	6SN7GT	2.6 Meg.	†3.5 Meg.	0Ω	1 Meg.	†2.5KΩ	0Ω	0Ω	.1Ω	
V 16	6K6GT	5KΩ	.1Ω	†15KΩ	†15KΩ	3.3 Meg.	Inf.	0Ω	7.2KΩ	
V 17	6SN7GT	900KΩ	†60KΩ	270KΩ	250KΩ	†100KΩ	0Ω	0Ω	.1Ω	
V 18	6BG6G	Inf.	.1Ω	82Ω	†10KΩ	1 Meg.	1 Meg.	0Ω	†10KΩ	TOP CAP †3KΩ
V 19	6W4GT	Inf.	Inf.	†3KΩ	Inf.	†60Ω	1 Meg.	0Ω	.1Ω	
V 20	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †3KΩ
V 21	5U4G	Inf.	12KΩ	Inf.	20Ω	Inf.	23Ω	Inf.	12KΩ	
V 22	12LP4A	0Ω	1.1 Meg.	PIN 10 †22KΩ	PIN 11 55KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 2 OF V21.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

Connect a jumper across terminals "C" and "D" of the horizontal oscillator transformer L28. Tune in a station and, if possible, sync the picture and proceed as follows:

1. Turn horizontal hold control fully clockwise. Adjust the Frequency Adjustment (B1) so picture is just out of sync and the horizontal blanking appears as a vertical bar.
2. Turn the hold control approximately a quarter of a turn from the fully clockwise position and notice the picture width and linearity. If the width and linearity is incorrect, adjust the horizontal drive (B2) and size (B3) controls until the picture is correct. If B2 and B3 require adjustment repeat step 1 above.

HORIZONTAL LOCKING RANGE ADJUSTMENT

Turn the horizontal hold control fully counterclockwise. Remove signal momentarily by turning channel switch to another channel and back again. Slowly turn the hold control clockwise and note the number of diagonal bars that appear just before the picture "syncs".

If more than $4\frac{1}{2}$ bars are present just before synchronization, turn the horizontal locking range trimmer (B4) slightly clockwise. If less than $3\frac{1}{2}$ bars are present, turn B4 slightly counterclockwise.

Turn the hold control counterclockwise and momentarily interrupt the signal and check the number of bars present at the pull-in point. Repeat this procedure until $3\frac{1}{2}$ to $4\frac{1}{2}$ bars are present.

HORIZONTAL OSCILLATOR WAVEFORM ADJUSTMENT

Remove the jumper across terminals "C" and "D" of L28.

Turn the horizontal hold control fully clockwise. Adjust B5 with a non-metallic screwdriver until the horizontal blanking bar is present on the raster.

Connect the low capacity probe of an oscilloscope to terminal "C" of L28. Turn the horizontal hold control one quarter of a turn from the clockwise position until the picture "syncs". The pattern on the scope should be similar to Fig. 7 . Adjust B5 until the broad and narrow peaks are of the same amplitude (if necessary, while making this adjustment turn the hold control to keep the picture in synchronization).

This adjustment must be carefully made to assure correct circuit operation. If the broad peak is lower in amplitude than the sharp peak, the oscillator drift becomes greater and the circuit has great susceptibility to noise pluses. However, if the broad peak is greater in amplitude than the sharp peak, the oscillator is overstabilized, the pull-in range inadequate, and there is the possibility of double triggering of the oscillator as the horizontal hold control approaches the extreme clockwise position.

HORIZONTAL OSCILLATOR ADJUSTMENTS CHECK

Turn the horizontal hold control fully counterclockwise. Momentarily remove the signal and then slowly turn the hold control clockwise and note the number of bars present just before the picture synchronizes.

If more than $4\frac{1}{2}$ bars are present, turn B4 slightly clockwise. If less than 3 bars are present, turn B4 slightly counterclockwise. Momentarily remove the signal and recheck the number of bars present at the pull-in point. Repeat this procedure until $4\frac{1}{2}$ bars are present just before synchronization occurs.

Turn the horizontal hold control fully clockwise. The picture should be just out of synchronization to the extent that the horizontal blanking bar appears as a single vertical or diagonal bar in the picture. Retouch B1 until this condition exists.

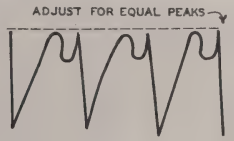


FIG.7

DISASSEMBLY INSTRUCTIONS

1. Remove four knobs from front of cabinet.
2. Remove six screws holding rear cover in place.
3. Disconnect power line, remove rear cover.
4. Disconnect built-in antenna.
5. Disconnect two speaker leads.
6. Remove four hex head bolts holding set in cabinet.
7. Remove set from cabinet.
8. Remove four 5/16" hex nuts from speaker.
9. Remove speaker from cabinet.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AG5	6AG5	7BD	
V4	2nd Video IF	6AG5	6AG5	7BD	
V5	3rd Video IF	6AG5	6AG5	7BD	
V6	Video Det.-DC Rest.	6AL5	6AL5	6BT	
V7	1st Video Amp.-1st Sync. Amp.	12AT7	12AT7	9A	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	2nd Video Amp.-Sync. Sep.	12AU7	12AU7	9A	
V10	Sound IF Amp.	6BA6	6BA6	7BK	
V11	Limiter	6AU6	6AU6	7BK	
V12	Disc.	6AL5	6AL5	6BT	
V13	AF Amp.	6AV6	6AV6	7BT	
V14	Audio Output	6K6GT	6K6GT	7S	
V15	2nd Sync Amp.-Vert. Osc.	6SN7GT	6SN7GT	8BD	
V16	Vert. Output	6K6GT	6L6GT	7S	
V17	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V18	Hor. Output	6BG6G	6BG6G	9BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rect.	1B3GT	1B3GT	3C	
V21	LV Rect.	5U4G	5U4G	5T	
V22	Picture Tube	12LP4A	12LP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	450	45X376	AF888J		UP8445		TVL-3777	▲ Filter
B	30	450							▲ Filter
C2A	80	450	45X376	AF888J		UP8445		TVL-3777	▲ Filter
B	30	450							▲ Filter
C3A	10	450	45X375	rAF22J		UP5CJ879		TVL-3749	■ Output Deup.
B	10	450		rAR550/50					■ Decoupling
C	40	50							Output Cath. Byp.
C4A	10	450	45X375	rAF22J		UP5CJ879		TVL-3749	■ Decoupling
B	10	450		rPR550/50					▲ Vert. Output Decoup. Vert. Output Cath.
C	40	50							Filter *
C5	30	450	47X379	PR5450/30		BR3045A		TVA-23	last Sync. Amp. Cath.
C6	10	25		PR525/10		BR10JA		TVA-1204	Ant. Coupling
C7	1000			GP1000M	D6-102		GP2L-001		Ant. Coupling
C8	1000			GP1000M	D6-102		GP2L-001		RF Coupling
C9	15			GP15K	D6-150		GP1K-15		AGC Filter
C10	1000			GP1000M	D6-102		GP2L-001		RF Screen Byp.
C11	680			GP680M	D6-681		GP2K-680		RF Bypass
C12	680			GP680M	D6-681		GP2K-680		RF Coupling
C13	.25				D2-.5				RF Coupling
C14	.5				D2-.5				RF Bypass
C15	2.2*				D6-471		GP2K-470		RF Plate Dec.
C16	470			GP470M	D6-471		GP2K-470		Conv. Grid Filter
C17	470			GP470M	D6-471		GP2K-470		Osc. Grid Cap.
C18	10			CN10FNPO	D2-10		NPOK-10		Osc. Feedback
C19	3			C13DN750			N750K-3		Filament Bypass
C20	680			GP680M	D6-681		GP2K-680		Fixed Trimmer
C21	10			CN10FNPO	D2-10		NPOK-10		Fixed Trimmer
C22	1000			GP1000M	D6-102		GP2L-001		Filament Bypass
C23	68		47X501	CN68KN750	DN-68		N750L-68		Fixed Trimmer
C24	1000	500	47X645	1468-00025	D6-271	SW5T25	GP2K-270	1FM-325	IF Coupling
C25	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	AGC Filter
C26	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	RF Bypass
C27	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	1st V. IF Decoup.
C28	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	1st V. IF Fil. Byp.
C29	270	500	47X445	1468-00025	D6-271	SW5T25	GP2K-270	1FM-325	IF Coupling
C30	47			CN47JNPO	D2-470	SR5Q5	NPOL-47	MS-45	Fixed Trimmer
C31	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	AGC Filter
C32	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	RF Bypass
C33	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	2nd V. IF Decoup.
C34	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	2nd V. IF Fil. Byp.
C35	75			CN75JN750	DN-75		N750L-75		Fixed Trimmer
C36	270	500	47X445	1468-00025	D6-271	SW5T25	GP2K-270	1FM-325	IF Coupling
C37	47	500	47X565	1468-00005	D2-47	SR5Q5	NPOM-50	MS-45	Fixed Trimmer
C38	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	3rd V. IF Cath.
C39	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	3rd V. IF Fil.
C40	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	3rd V. IF Dec.
C41	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	RF Bypass
C42	270	500	47X445	1468-00025	D6-271	SW5T25	GP2K-270	1FM-325	IF Coupling
C43	5		47X562	GP5K		SW5V5	GP1K-5	MS-15	V. Diode Filter
C44	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	V. Det. Fil. Byp.
C45	43		47X563	CN43JN030			N030K-43		Peaking
C46	360	500	47X568	1469-00035					Fixed Trimmer
C47	.05	400	D67503	P468-05		PTE4S5		TM-15	Video Coupling
C48	1000	500	47X569	1468-00005	D6-102	1WSDI	GP2L-001	1FM-21	Det. Feedback
C49	.1	200	B65104	P288-1		PTE4P1		TM-1	AGC Filter
C50	.5	200	B65504	P288-5		GT2P5		TC-5	AGC Filter *
C51	.5	200	B65504	P288-5		GT2P5		TC-5	AGC Filter *
C52	.1	600	F65104	P688-1		PTE6P1		TM-1	Video Coupling
C53	.05	400	D67503	P488-05		PTE4S5		TM-15	Video Coupling
C54	.1	200	B65104	P288-1		PTE4P1		TM-1	Pic. Tube Cath. Byp.
C55	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	S. IF Cath. Byp.
C56	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	S. IF Dec.
C57	5000		47X507	BPD-5	D6-502	1D5DS	81L-005	39C1	Limiter Grid Filter
C58	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	Limiter Screen
C59	1000		47X519	GP1000M	D6-102	1WSDI	GP2L-001	1FM-21	Limiter Plate Dec.
C60	270	500	47X445	1468-00025	D6-271	SW5T25	GP2K-270	1FM-325	RF Bypass
C61	5000		47X507	BPD-5	D6-502	1D5DS	81L-005	39C1	Disc. Fil. Byp.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C62	.05	200	D67503	P288-05		PTE4S5		TM-15	Audio Coupling
C63	005	200	B65502	P688-005	D6-502	PTE6D5	811-005	TM-25	Tone Compensation
C64	01	200	B65103	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C65	05	400	D67503	P488-05				TM-15	AF Amp. Plate Dec. *
C66	05	400	D67503	P488-05				TM-15	Audio Coupling
C67	005	600	F65502	P688-005	D6-502	PTE6D5	811-005	TM-25	Output Plate Byp.
C68	05	400	D67503	P488-05				TM-15	Sync. Coupling
C69	1	400	D65104	P488-1				TM-1	Sync. Coupling
C70	100	500	47X326	1468-0001	D6-101	SW5T1	GP1K-100	1FM-31	Sync. Coupling
C71	.002	200	B65202	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Integrator Net.
C72	.005	200	B65502	P688-005	D6-502	PTE6D5	GP2M-005	TM-25	Integrator Net.
C73	.005	200	B65502	P688-005	D6-502	PTE6D5	GP2M-005	TM-25	Integrator Net.
C74	4700	500	47X543	1464-005	D6-472	ID5D5	GP2M-0047	1FM-25	Vert. Osc. Grid
C75	.03	400	F65303	P488-03		PTE4S3		TM-13	Vert. Discharge
C76	25	400		P488-25		GT4P25		TC-2	Vert. Sweep Coupling
C77	180	500	47X584	1469-0002	D6-181	SR5T2	GP2K-180	MS-32	Hor. Sync. Coupling
C78	002	600	F67202	P668-002	D6-202	PTE6D2	GP2M-002	TM-22	Hor. Sync. Coupling
C79	5	1500	47X533						Hor. Feedback
C80	.25	200	B65254	P488-25		GT2P25		TC-2	AFC Filter
C81	.02	200	B65203	P488-02		PTE4S2		TM-12	AFC Filter
C82	.05	600	F67503	P688-05		PTE6S5		TM-15	Hor. AFC Plate
C83	220	500	47X573	1468-00025	D6-221	SW5T25	GP2K-220	1FM-325	Hor. Osc. Grid Cap.
C84	01	400	46X410	P488-01	D6-103	PTE4S1	811-01	TM-11	Fixed Trimmer
C85	1600	500	47X567						Hor. Discharge
C86	680	500	47X566	GP680K	D6-681	1W5T7	GP2K-680	1FM-37	Hor. Sweep Coupling
C87	24	500		1469-000025	D2-24	SR5Q25	NPOL-25	MS-425	Hor. Feedback
C88	24	500		1469-000025	D2-24	SR5Q25	NPOL-25	MS-425	Hor. Feedback
C89	.05	600	F67503	P688-05		PTE6S5		TM-15	Hor. Output Screen
C90	.25	200	B65254	P488-25		GT2P25		TC-2	Hor. Output Cath.
C91	.5	200	B65504	P288-5		GT2P5		TC-5	Damper Filter
C92	.5	200	B65504	P288-5		GT2P5		TC-5	Hor. Sweep Coupling
C93	.01	400	46X410	P488-01	D6-103	PTE4S1	811-01	TM-11	Line Filter
C94	.01	400	46X410	P488-01	D6-103	PTE4S1	811-01	TM-11	Line Filter
C95	500	20000	47X580		TV3-502				HV Filter

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	3000Ω	½		Concentrikit			Contrast control-front
B	1 Meg.	½	78X4	B13-137X		SBBT-503-S	Volume control tapped at 200KΩ-rear
C	Shaft End			E-202 *			Attach per instructions in "Concentrikit"
D	Filter			76-1 *			Attach per instructions in "Concentrikit"
R2A	50KΩ	½	40X292	Q11-123	AM-44-S	B-31	Horiz. hold control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions
R3A	500KΩ	½	40X290	Q11-133	AM-58-S	B-59	Brightness control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R3A per instructions
R4A	5000Ω	½	40X294	Q11-114			Vert. linearity control
B	Sleeve						
	Bushing		Not Req.	5-5 †			
R5A	2.5 Meg.	½	40X293	Q11-239	AM-84-S	B-83	Height control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R5A per instructions
R6A	1 Meg.	½	40X291	Q11-137	AM-81-S	B-99	Vert. hold control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R6A per instructions
R7	6500Ω	2	40X295			SV-914	Focus control-Wire Wound

* Additional parts to be used with "Concentrikit"

† Attach B3 sleeve bushing and cut to same length as original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R8	2200Ω 20%	½	B85222	BTS-2200	RF Amp. Grid
R9	4700Ω	½	B84472	BTS-4700	RF Amp. Screen
R10	22KΩ 20%	½	B85223		Osc. Grid
R11	4700Ω	½	B84472	BTS-4700	Osc. Plate
R12	270KΩ 20%	½	B85274		Conv. Grid
R13	5600Ω 5%	½	C85562		Conv. Plate
R14	1000Ω	½	B84102	BTS-1000	Antenna Isolation
R15	1000Ω	½	B84102	BTS-1000	Antenna Isolation
R16	6000Ω	½	B84102	BTS-1000	AGC Network
R17	5600Ω 5%	½	C85562		1st Video IF Amp. Grid
R18	470Ω 5%	½	B83470		1st Video IF Amp. Cathode
R19	1000Ω	½	B84102	BTS-1000	1st Video IF Amp. Decoupling
R20	150Ω	½	B84151		Decoupling
R21	1000Ω	½	B84102	BTS-1000	AGC Network
R22	8200Ω	½	B83822		2nd Video IF Amp. Grid
R23	33Ω 5%	½	B83330		2nd Video IF Amp. Cathode
R24	1000Ω	½	B84102	BTS-1000	2nd Video IF Amp. Decoupling
R25	12KΩ	½	B83123		3rd Video IF Grid
R26	150Ω	½	B84150		3rd Video IF Cathode Decoupling
R27	330Ω 20%	½	B85331		3rd Video IF Amp. Plate
R28	22KΩ 20%	½	B85223		3rd Video IF Amp. Decoupling
R29	2200Ω	½	B84222	BTS-2200	Video Det. Diode Load
R30	4700Ω 5%	½	B83472	BTS-4700-5%	AGC Filter *
R31	33KΩ	½	B84333	BTS-33K	AGC Keying Grid
R32	22KΩ	½	B84223	BTS-22K	AGC Network
R33	820KΩ	½	B84824	BTS-820K	AGC Network
R34	100KΩ	½	B84104	BTS-100K	AGC Network-See Note 1
R35	150KΩ	½	B84154	BTS-150K	AGC Filter-See Note 3
R36	56000Ω	½	C84562	BTA-5600	1st Video Amp. Plate
R37	2700Ω	½	C84272	BTA-2700	1st Video Amp. Plate
R38	10KΩ	½	B84103	BTS-10K	Isolation
R39	1 Meg.	½	B84105	BTS-1 Meg.	1st Sync. Amp. Grid
R40	1 Meg.	½	B84105	BTS-1 Meg.	2nd Video Amp. Grid
R41	100Ω	½	B84101	BW-½-100	2nd Video Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R42	3900Ω	½	C83392	BTA-3900	2nd Video Amp. Plate
R43	10KΩ	½	B84103	BTS-10K	Isolation
R44	1 Meg.	½	B84105	BTS-1 Meg.	DC Rest. Diode Load
R45	100KΩ 20%	½	B85104	BTS-100K	Picture Tube Grid
R46	22KΩ 20%	½	B85223	BTS-22K	1st Sync. Amp. Cathode
R47	8200Ω	½	B84822	BTS-8200	Voltage Divider
R48	22KΩ	½	C84223	BTA-22K	1st Sync. Amp. Plate
R49	2200Ω	½	B84222	BTS-2200	1st Sync. Amp. Coupling
R50	68KΩ	½	B84683	BTA-68K	1st Sync. Sep. Plate
R51	100KΩ 20%	½	B85104	BTS-100K	Voltage Divider
R52	820Ω	½	B84820		Sound IF Amp. Cathode
R53	1000Ω	½	B84102	BTS-1000	Sound IF Amp. Decoupling
R54	470KΩ 20%	½	B85474		Limiter Grid
R55	22KΩ 5%	½	B83223		Limiter Screen
R56	1000Ω	½	B84102	BTS-1000	Limiter Plate Decoupling
R57	5.1Ω	½	43X239		Disc. Filament-Wire Wound
R58	100KΩ	½	B84104	BTS-100K	Disc. Diode Load
R59	100KΩ	½	B84104	BTS-100K	Disc. Diode Load
R60	68KΩ	½	B84683	BTS-68K	Tone Compensation
R61	10 Meg. 20%	½	B85106	BTS-10 Meg.	AF Amp. Grid
R62	270KΩ	½	B84274	BTS-270K	AF Amp. Plate
R63	47KΩ	½	B84473	BTS-47K	AF Amp. Plate Decoupling-See Note 2
R64	470KΩ 20%	½	B85474	BTS-470K	Audio Output Grid
R65	470Ω	1	C84471	BTA-470	Audio Output Cathode
R66	1000Ω	2	D84102	BT-2-1000	Audio Output Plate Decoupling
R67	1 Meg.	½	B84105	BTS-1 Meg.	2nd Sync. Amp. Grid
R68	330Ω	½	B84330	BW-½-330	2nd Sync. Amp. Plate
R69	680Ω	½	B84680	BTS-680	2nd Sync. Amp. Plate
R70	22KΩ	½	B84223	BTS-22K	Integrator
R71	820Ω	½	B84822	BTS-8200	Integrator
R72	820Ω	½	B84822	BTS-8200	Integrator
R73	1.5 Meg.	½	B84155	BTS-1.5 Meg.	Vert. Osc. Grid
R74	100KΩ 20%	½	B85104	BTS-100K	Voltage Divider
R75	1 Meg.	½	B84105	BTS-1 Meg.	Vert. Osc. Plate
R76	8200Ω	½	B84822	BTS-8200	Vert. Peaking
R77	3.3 Meg. 20%	½	B85335	BTS-3.3 Meg.	Vert. Output Grid
R78	2200Ω	½	B84222	BTS-2200	Vert. Output Cathode
R79	10KΩ	2	D84103	BT-2-10K	Vert. Output Decoupling
R80	560KΩ	½	B84564	BTS-560K	Feedback
R81	820KΩ	½	B84824	BTS-820K	Horiz. AFC Grid
R82	150KΩ	½	B84154	BTS-150K	Horiz. AFC Cathode
R83	150KΩ	½	B84154	BTS-150K	Voltage Divider Network
R84	100KΩ 5%	½	B83104	BTS-100K-5%	Horiz. Osc. Grid
R85	820KΩ	½	B84822	BTS-8200	Horiz. Osc. Transformer Shunt
R86	8200Ω	½	B84822	BTS-8200	Horiz. AFC Filter Network
R87	2.7 Meg.	2		BTA-2.7 Meg.	Voltage Divider
R88	68KΩ	½	B84683	BTS-68K	Voltage Divider Network
R89	120KΩ	½	B84124	BTS-120K	Voltage Divider Network
R90	150KΩ	½	B84154	BTS-150K	Horiz. Filter Network
R91	82KΩ	½	B84823	BTS-82K	Horiz. Osc. Plate
R92	22KΩ	½	B84223	BTS-22K	Horiz. Osc. Transformer Shunt
R93	1 Meg.	½	B84105	BTS-1 Meg.	Horiz Output Grid
R94	150Ω		B84151		Parasitic Suppressor
R95	82Ω	2	B84820	BW-½-82	Horiz. Output Cathode-Wire Wound
R96	10KΩ	2	D84103	BT-2-10K	Horiz. Output Screen
R97	3300Ω	5	43X352		Filter-See Note 3
R98	18KΩ	½	C84183	BTA-18K	Voltage Divider
R99	56KΩ	½	B84563	BTS-56K	Decoupling
R100	470KΩ 20%	½	B85474	BTS-470K	Voltage Divider
R101	1Ω 5%	5	43X249		HV Rect. Filament
R102	1 Meg. 20%	½	C85105		HV Filter
R103	680Ω	2	D84681	BT-2-680	Focus Coil Shunt
R104	500Ω	10	43X245	AB-500	Filter-Wire Wound
R105	150Ω	10	43X246	AB-150	Filter-Wire Wound
R106	10KΩ	2	D84103	BT-2-10K	Bleeder
R107	270KΩ	½	B84274	BTS-270K	Sync. Sep. Cathode-See Note 4

Note 1. Some models use a 220KΩ resistor in this application.
Note 2. Not used in all models.
Note 3. Some models use three 10KΩ 2 watt resistor in parallel to obtain required resistance and wattage.
Note 4. Some models use a 47KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	720VCT	5VAC	6.3VAC	53X298	P-8159	P-3063 ①	TP-355
	② 1.9A	220ADC	② 3A	② 5.9A				

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	175Ω	130Ω	54X5	A-8111 ②	A-3000 ②	TBO-2 ②	Vert. Block Osc. Trans. Hor. Output Trans.
T3	335Ω	3Ω	53X301				
	Tap ③ 46Ω,	Tap ③ 2.8Ω					
	45Ω	SEC. 2 0Ω					
T4	1300Ω	16Ω	51X147	A-8112	A-3036	TSO-5 ②	Vert. Output Trans.
T5A	14Ω		9A2106	DY-7	MD-3		Hor. Deflection Coil
B	81Ω						Vert. Deflection Coil
T6	380Ω		9A2107	FC-10	MF-3		Focus Coil

② Drill one new mounting hole.

AIRLINE MODEL 05WG-3031 A

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	7100Ω	4.2Ω	450Ω	.5Ω	51X146	A-3878	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.2Ω	12A490	ST-102 ③ MOD. P12-S	12A4A	③ Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↜)	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.220ADC	51Ω	2 Henry	52X88	C-2326	C-2991	TR-3300②	② Drill one new mounting hole.

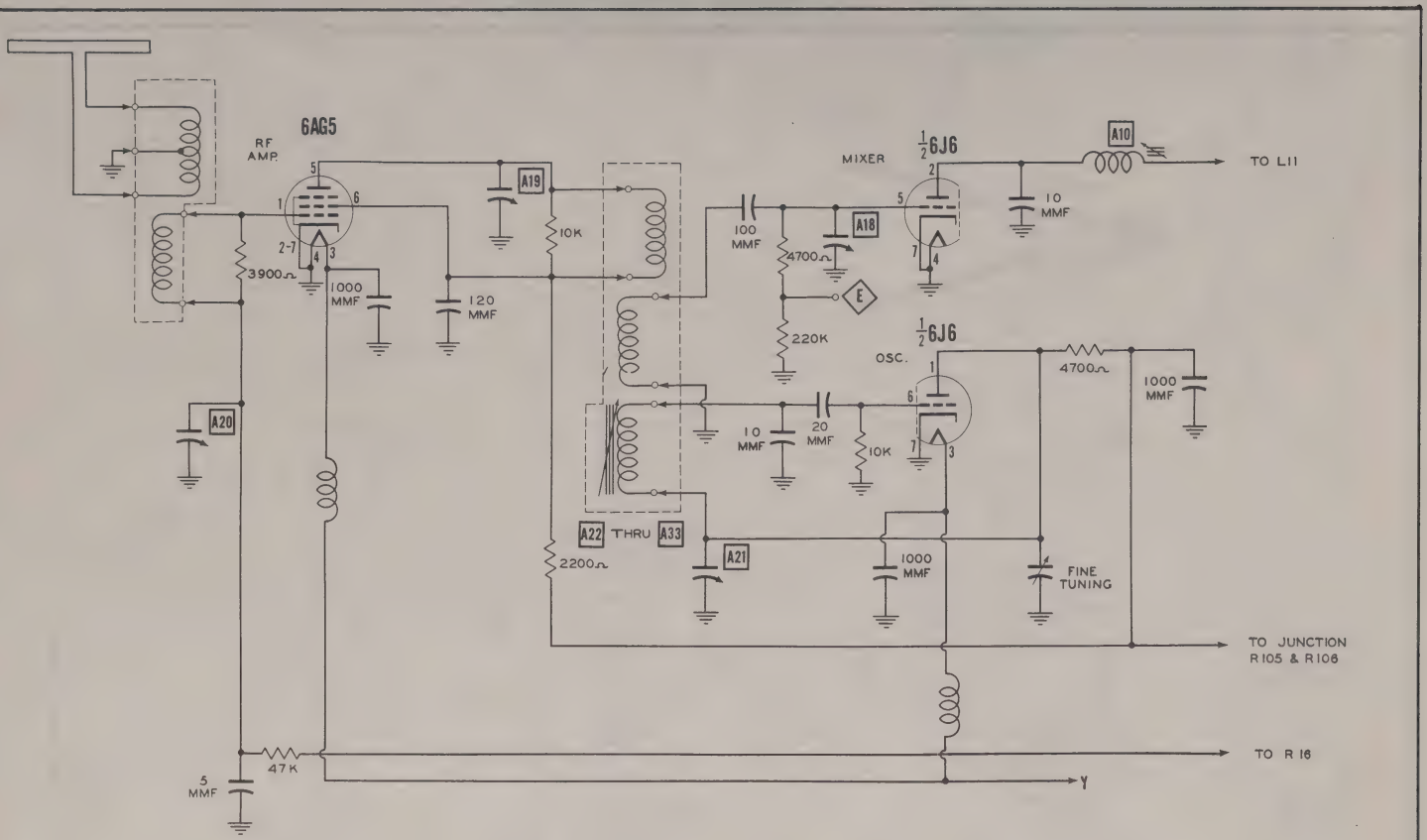
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω				Part of tuner.
L3	Ant. Coil	0Ω				Part of tuner.
L4	RF Coil	0Ω				Part of tuner.
L5	Osc. Coil	0Ω				Channel 6, part of tuner.
L6	Osc. Coil	0Ω				Channel 13, part of tuner.
L7	1st Video IF	0Ω				Part of tuner.
L8	Fil. Choke	.5Ω				Part of tuner.
L9	Fil. Choke	0Ω		9A2033		
L10	Conv. Plate	.1Ω		9A2059		
L11	1st Video IF Coupling	.1Ω		9A2072		
L12	Fil. Choke	0Ω		9A2033		
L13	2nd Video IF -Sound Take Off	.2Ω	0Ω	9A2076		
L14	Fil. Choke	0Ω		9A2033		
L15	3rd Video IF	.2Ω	.1Ω	9A2055		
L16	Sound Trap	.1Ω	.1Ω	9A2073		
L17	Fil. Choke	0Ω		9A2033		
L18	RF Choke	2.8Ω		9A1979		
L19	4th Video IF	.2Ω		9A2071		
L20	Peaking	11.5Ω		9A2090	19-1923	Green dot, 390 microhenries
L21	Peaking	5.2Ω		9A2086	19-1920 †	Wound on 4.7KΩ resistor, 95 microhenries, Yellow dot.
L22	Peaking	8Ω		9A2088	19-1922	Blue dot, 196 microhenries
L23	4.5MC Trap	.4Ω		9A2074		
L24	Peaking	7Ω		9A2089	19-1921 †	Wound on 2.2KΩ resistor, red dot, 183 microhenries
L25	Peaking	6.2Ω		9A2087	19-1921	White dot, 125 microhenries
L26	Sound IF	.2Ω	.2Ω	9A1986		
L27	Disc. Trans.	.2Ω	.2Ω	9A2049		
L28	Horiz. Osc. Trans.	150Ω	47Ω	9A2057		
L29	Horiz. Size	.2Ω		9A1976		Not used in all sets.

† Parallel with 2.2KΩ resistor.
‡ Parallel with 4.7KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M1A	RF Tuner	25A1066	Switch Type, order by number stamped on tuner
B	RF Tuner	25A1075	Switch Type, order by number stamped on tuner
C	RF Tuner	25A1071	Turret Type, order by number stamped on tuner
M2	Fuse	16X145	.25A 250V Type MDV
M3	Ion Trap	2A382	
	Trimmer	17A260-A	Dual trimmer(horiz. drive, horiz. frequency)
	Safety Glass	17X118	
	Escutcheon	4X1065	Channel selector
	Escutcheon	4X1029	Volume and contrast
	Knob	10A741	Channel selector
	Knob	10A742	Fine tuning
	Knob	10A752	Contrast
	Knob	10A753	Volume
	Cover	4X1081	Front panel



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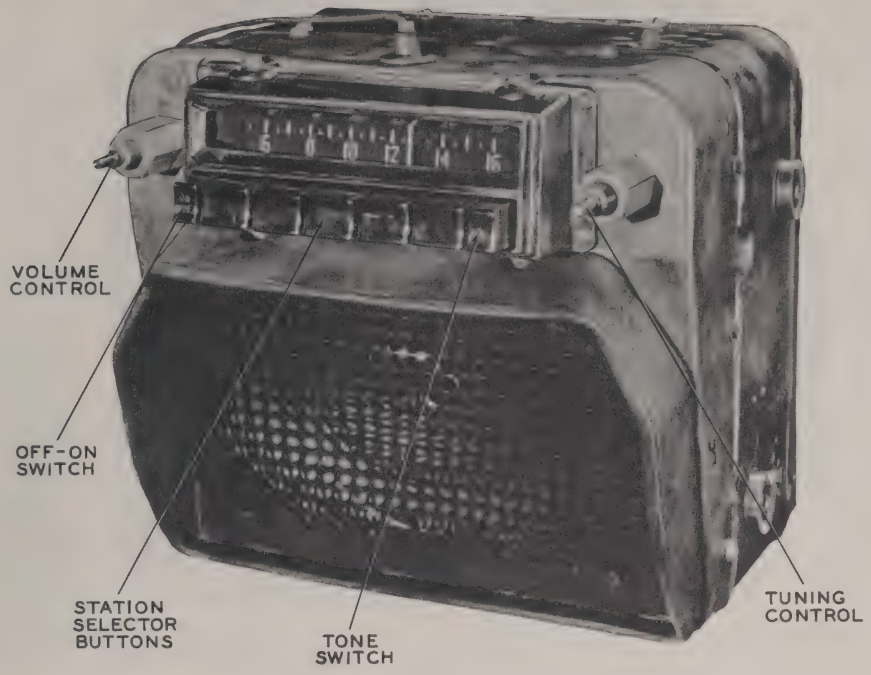
ALTERNATE TUNER

CADILLAC
MODEL 7258755



CADILLAC
MODEL 7258755

CADILLAC MODEL 7258755

TRADE NAME	Cadillac, Model 7258755
SUPPLIER	Cadillac Motor Car, Div. of General Motors, Detroit, Michigan
TYPE SET	Battery Operated Custom-Built Automotive Superheterodyne Receiver
TUBES	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 DET-AF Amp., 6SQ7 AVC-Phase Inv., (2) 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.6 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set tone control to "TREBLE" position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7 (V2). Low side to chassis.	260KC (400 ∿ Mod.)	High frequency stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	68MMF	High side to antenna connector. Low side to chassis.	1615KC	"	"	A5, A6, A7	Set the slotted end of the oscillator core out 1 25/32" from mounting end of coil form. Adjust A5, A6 and A7 for maximum output.
3.	68MMF	"	1430KC	Tune for max. output	"	A8, A9	Adjust for maximum output.
4.	68MMF	"	1000KC	"	"		Adjust pointer adjustment screw until pointer indicates 1000KC on the dial.

WITH RECEIVER INSTALLED IN AUTO, AND ANTENNA FULLY EXTENDED, TUNE IN A WEAK SIGNAL NEAR 1400KC AND ADJUST A7 FOR MAXIMUM VOLUME.

PUSHBUTTON ADJUSTMENT

To set push buttons, pull pushbutton to the right and out. Tune in the desired station manually and push button all the way in, then release. Repeat this procedure for each pushbutton for the desired station.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CADILLAC PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	5229	6SK7	8N	
V2	Converter	5222	6SA7	8R	
V3	IF Amp.	5229	6SK7	8N	
V4	DET-AF Amp.	5231	6SQ7	8Q	
V5	AVC-Phase Inv.	5231	6SQ7	8Q	
V6	Power Output	5241	6V6GT	7AC-	
V7	Power Output	5241	6V6GT	7AC	
V8	Rectifier	5003	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CADILLAC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	400	M908	E3C152		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	25							Output Cathode
C2	.05	200	E503	P288-05	DF-503	PTE4S5		2TM-15	AVC Filter
C3	.05	400	E503	P488-05	DF-503	PTE4S5		4TM-15	Decoupling
C4	33	500	G330	SI33NPO	D6-330	5R5Q3	GPIK-33	19C24	RF Coupling
C5	39	500	G390	1469-00004	D6-390	5R5Q4	GPIK-39	MS-44	Fixed Trimmer
C6	180		7257424				N150M-180		Fixed Trimmer
C7	47	500	G470	1468-00005	D6-470	5W5Q5	GPIK-47	1FM-45	IF Coupling
C8	.02	400	E203	P488-02	DF-203	PTE4S2		4TM-12	Tone Comp.
C9	.001	600	E102	P688-001	D6-102	PTE6D1	GP2L-001	6TM-21	Audio Coupling
C10	220	500	G221	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	AF Amp. Plate
C11	.015	600	7237719	P688-015		PTE8S15		6TM-153	Audio Coupling
C12	.005	600	E502	P688-005	D6-502	PTE6D5	811-005	6TM-25	Audio Coupling
C13	.02	600	E203	P688-02	DF-203	PTE6S2		6TM-12	Audio Coupling
C14	.005	600	E502	P688-005	D6-502	PTE6D5	811-005	6TM-25	Tone Comp.
C15	.4	100	1218882						Tone Comp.
C16	.15	100	1218880	P288-15				2TM-154	Tone Comp.
C17	.006	800	H602	P1088-006		PTE16D6		MB-26	Output Plate
C18	.006	1600		P1688-006		PTE16D6		MB-26	Buffer

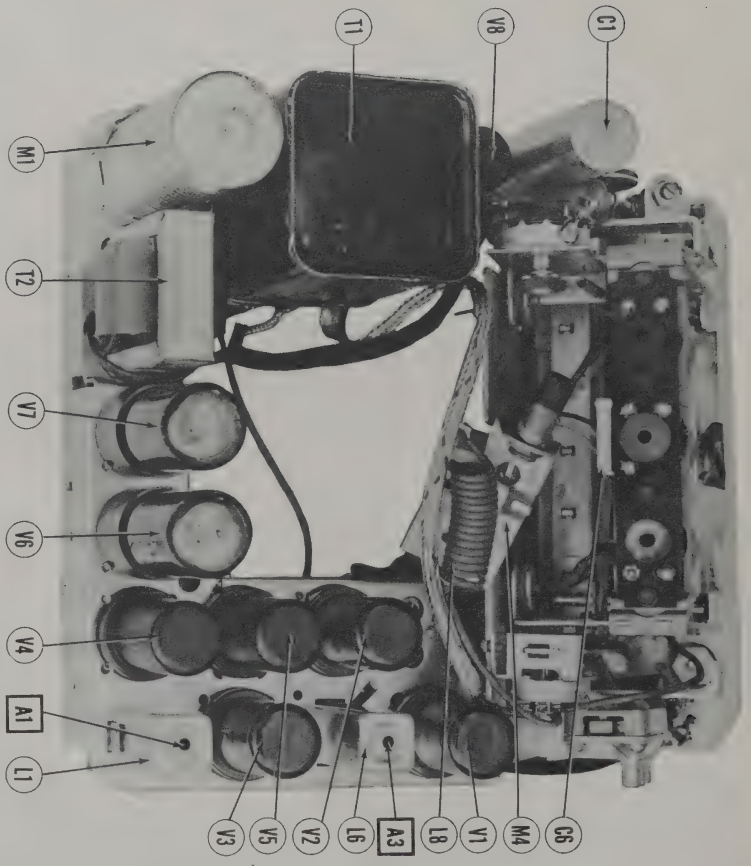
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CADILLAC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	300KΩ	½	7258954				Volume control-tapped at 50KΩ

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CADILLAC PART No.	IRC PART No.	
R2	2.2 Meg.	½	A225	BTS-2.2 Meg.	RF Grid
R3	220Ω	½	A221	BTS-220	RF Amp. Cathode
R4	15KΩ	1	B153	BTA-15K	RF Amp. Plate
R5	330KΩ	½	A334	BTS-330K	AVC Network
R6	15KΩ	2	C153	BTB-15K	Screen Dropping
R7	22KΩ	½	A223	BTS-22K	Osc. Grid
R8	6.8 Meg.	½	A685	BTS-6.8 Meg.	AVC Network
R9	1 Meg.	½	A105	BTS-1 Meg.	AVC Network
R10	270Ω	½	A271	BTS-270	IF Amp. Cathode
R11	47KΩ	½	A473	BTS-47K	Diode Filter
R12	56KΩ	½	A563	BTS-56K	Tone Compensation
R13	6.8 Meg.	½	A685	BTS-6.8 Meg.	AF Amp. Grid
R14	150Ω	½	A151	BTS-150	AF Amp. Cathode
R15	220KΩ	½	A224	BTS-220K	AF Amp. Plate

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CADILLAC PART No.	IRC PART No.	
R16	330Ω	1/2	A331	BTS-330	Feedback
R17	2700Ω	1/2	1213240	BTS-2700	Voltage Divider
R18	6.8 Meg.	1/2	A685	BTS-6.8 Meg.	Phase Inv. Grid
R19	180KΩ	1/2	1215560	BTS-180K	Voltage Divider
R20	2700Ω	1/2	1213240	BTS-2700	Phase Inv. Cathode
R21	1 Meg.	1/2	A105	BTS-1 Meg.	Diode Load
R22	220KΩ	1/2	A224	BTS-220K	Phase Inv. Plate
R23	220KΩ	1/2	A224	BTS-220K	Output Grid
R24	220KΩ	1/2	A224	BTS-220K	Output Grid
R25	100KΩ	1/2	A104	BTS-100K	Output Grid
R26	390Ω	1	B391	BTA-390	Output Cathode
R27	1200Ω	1/2	1213236	BTS-1200	Feedback
R28	3300Ω	1/2	A332	BTS-3300	Tone Compensation
R29	1800Ω	2	C182	BTB-1800	Filter-Wire Wound
R30	220Ω	1	B221	BTA-220	Hash Supp.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CADILLAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC ③ 4A	580VDC ③ .070 ADC			7255881		P-4076 ②	VT-4

② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CADILLAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	12,500Ω CT	6.8Ω	390Ω CT	.4Ω	7258390	A-3850 ①	A-2900 ①		① Bend mounting tabs down and file holes to fit.

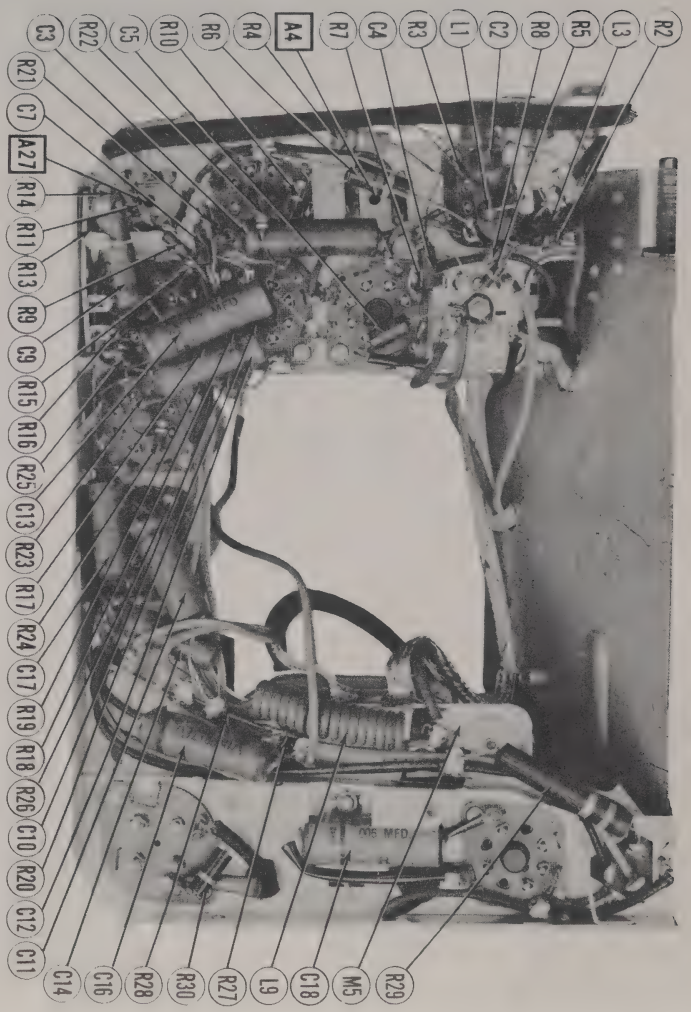
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CADILLAC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	6.8Ω	7258488		69A2Z7	
	CONE DIA.	V. C. DIA.				
SP2	9 x 6 1/8"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CADILLAC PART No.	MEISSNER PART No.
L1	Ant. Loading	6.7Ω		7255738	
L2	Ant. Coil	10Ω		7258914	
L3	Ant. Coupling	5.2Ω		7240251	
L4	RF Coil	10Ω		7258914	
L5	Osc. Coil	1.2Ω	4.6Ω	7258911	
L6	1st IF	52Ω	52Ω	1219508	16-6752
L7	2nd IF	50Ω	50Ω	1219509	16-6754
L8	Hash Choke	0Ω		1217846	
L9	Hash Choke	0Ω		1217846	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

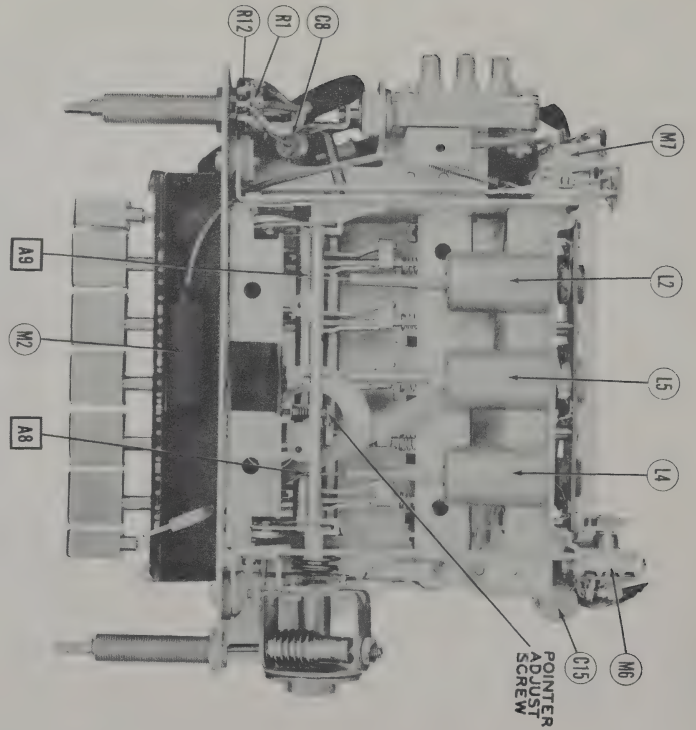
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				CADILLAC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
MI	Int.	6V	115 ∿	8542	A-100	C-00	5300	Original part #7239124

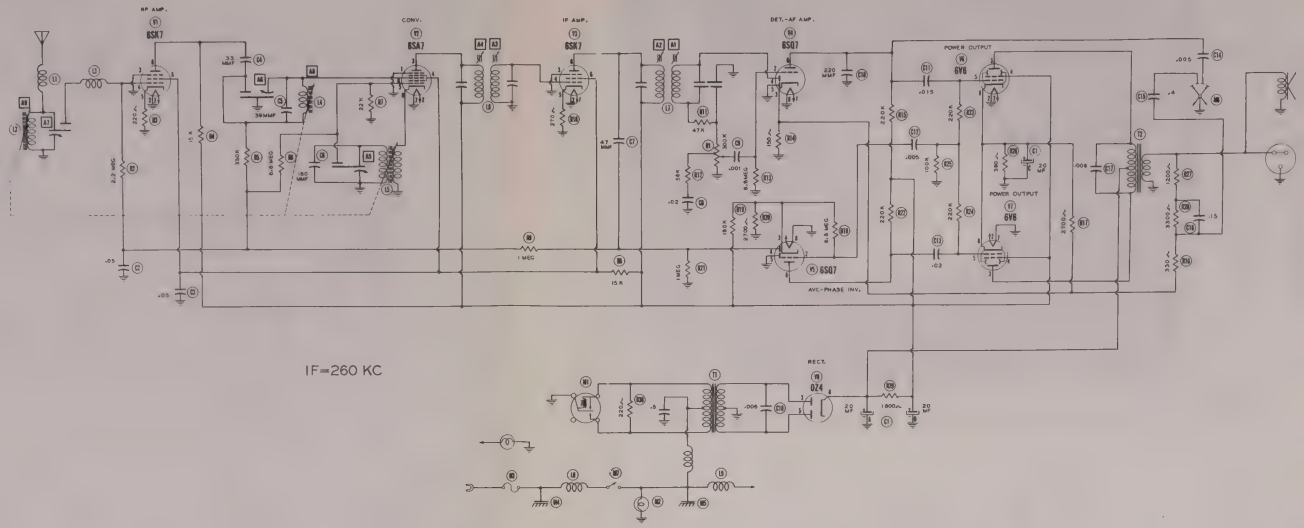
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CADILLAC PART No.		
M2	Bayonet	6-8	.4	White	187189		Type #55

MISCELLANEOUS

ITEM No.	PART NAME	CADILLAC PART No.	NOTES
M3	Fuse	147685	14 Amp.
M4	Spark Plate	7240797	
M5	Spark Plate	1217848	
M6	Switch	7258273	Tone
M7	Switch	7242411	On-Off
A5	Dual Trimmer	7242454	Osc. Adj.
A6	Dual Trimmer	7242454	RF Adj.
A7	Trimmer	7258236	Ant. Adj.
	Dial Glass	7258236	





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SQ7	0V	0V	0V	0V	1.3VDC	70VDC	6.3VDC	135VDC
V 3	6SA7	0V	6.3VDC	32VDC	70VDC	2.8.3VDC	0V	0V	-1VDC
V 5	6SK7	0V	0V	0V	0V	3VDC	70VDC	6.3VDC	260VDC
V 4	6SQ7	0V	-.1VDC	0VDC	0V	0V	-.05VDC	6.3VDC	0V
V 2	6SQ7	0V	0V	4.5VDC	-.1VDC	0V	-.06VDC	6.3VDC	0V
V 6	6V6GT	0V	0V	250VDC	0.0VDC	0V	0V	6.3VDC	14VDC
V 7	6V6GT	0V	0V	250VDC	0.0VDC	0V	0V	6.3VDC	14VDC
V 8	0Z4	0V	0V	370VAC	0V	370VAC	0V	0V	355VDC

† TAKEN WITH YACHIM TYPE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	3.2 Meg	220KΩ	117KΩ	6Ω	117KΩ
V 3	6SA7	0Ω	6Ω	31.5KΩ	117KΩ	33kΩ	1.3Ω	0Ω	1.5 Meg
V 5	6SK7	0Ω	0Ω	0Ω	550	220Ω	117KΩ	6Ω	31.5KΩ
V 4	6SQ7	0Ω	6.8 Meg	150Ω	250KΩ	0Ω	1320KΩ	6Ω	0Ω
V 2	6SQ7	0Ω	5.8 Meg	2.7KΩ	250KΩ	0Ω	1320KΩ	6Ω	0Ω
V 6	6V6GT	Inf.	0Ω	110Ω	31.5KΩ	220KΩ	Inf.	6Ω	350Ω
V 7	6V6GT	Inf.	0Ω	110Ω	31.5KΩ	220KΩ	220KΩ	6Ω	350Ω
V 8	0Z4	0Ω	Inf.	240Ω	Inf.	240Ω	Inf.	Inf.	700Ω

† MEASURED FROM PIN 6 OF V5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PHOTOFACT* Folder

EMERSON MODELS
650D, 654D, 655B
(CH. 120123-B)

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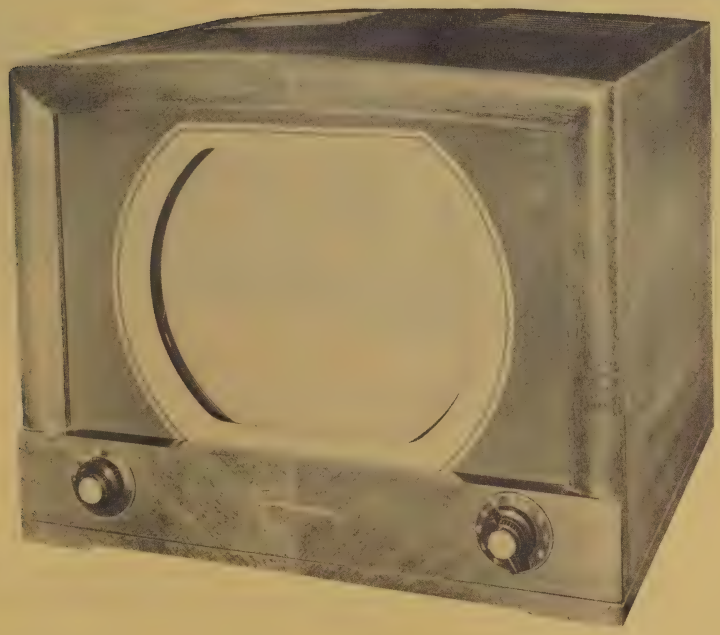

MODEL 650D

EMERSON MODELS
650D, 654D, 655B
(CH. 120123-B)

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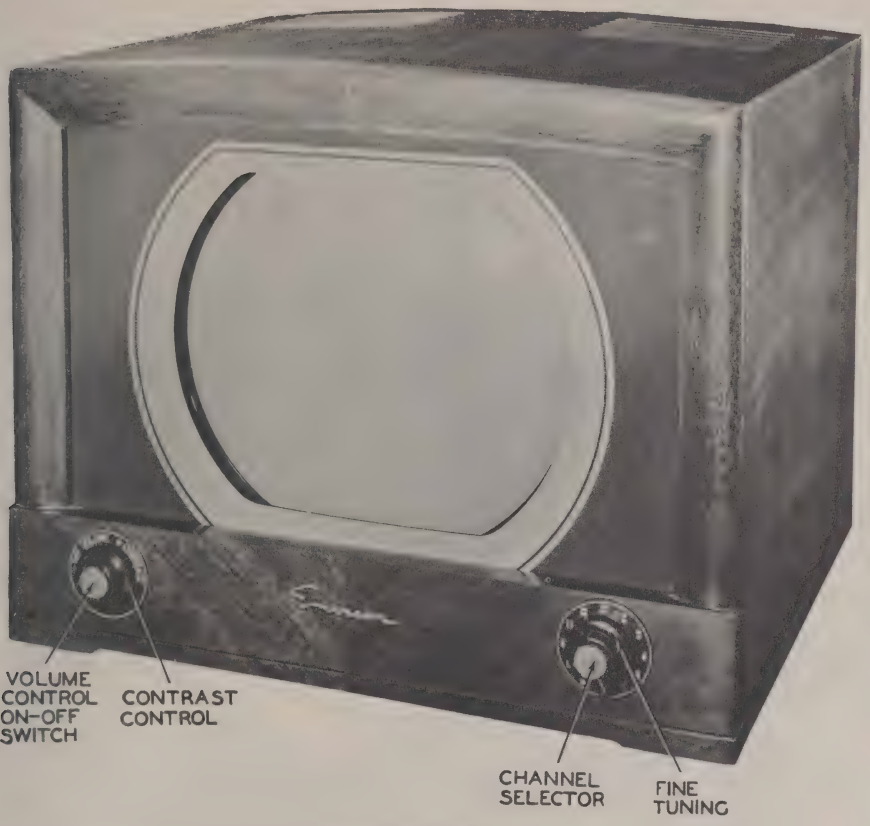
Date 10/50 Set No. 109—Folder No. 3

EMERSON MODELS
650D, 654D, 655D (Ch. 120123-B)



EMERSON MODELS
650D, 654D, 655D (Ch. 120123-B)

EMERSON MODEL 650D

TRADE NAME	Emerson, Models 650D, 654D, 655B (Ch.120123-B)
MANUFACTURER	Emerson Radio and Phono Corp., 111 Eighth Ave., New York (11), New York
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.2 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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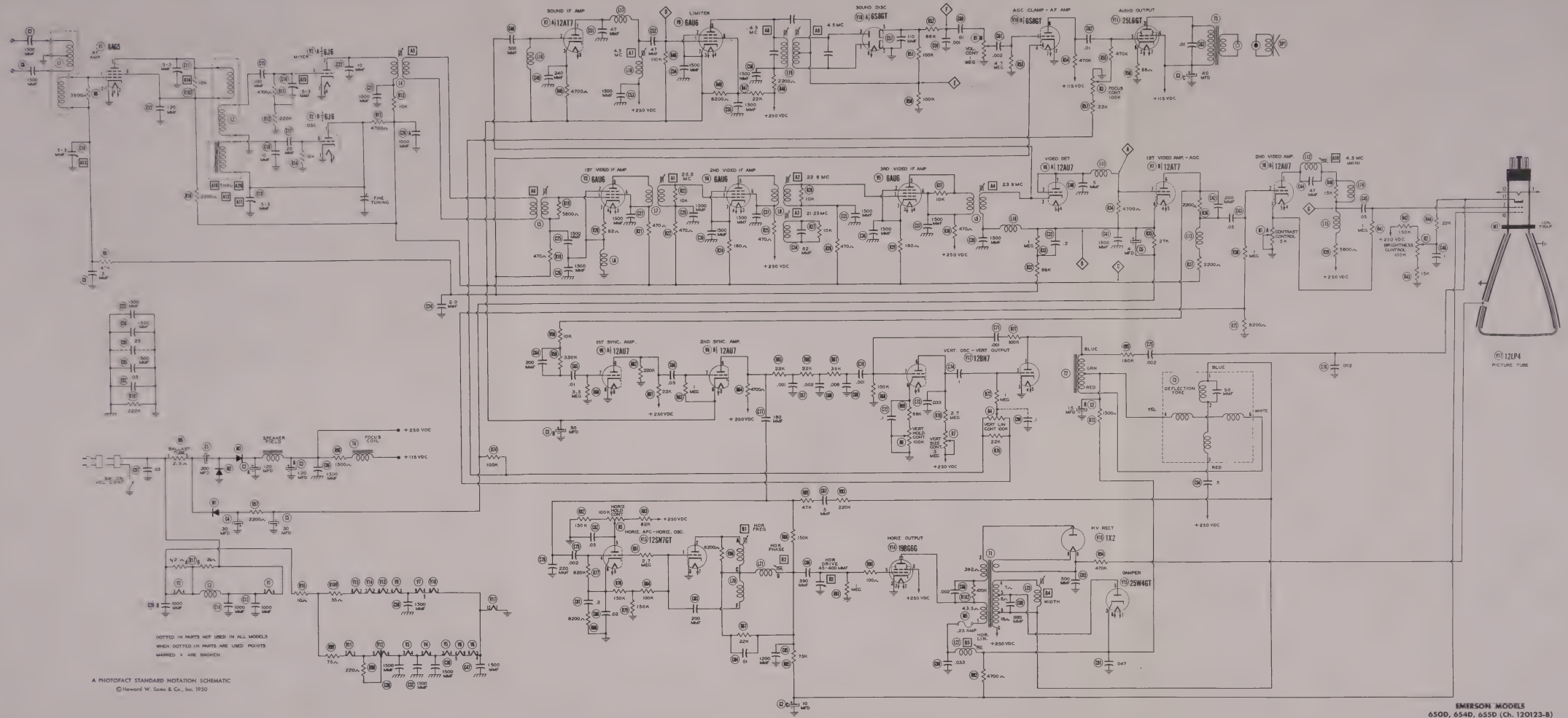

EMERSON MODELS
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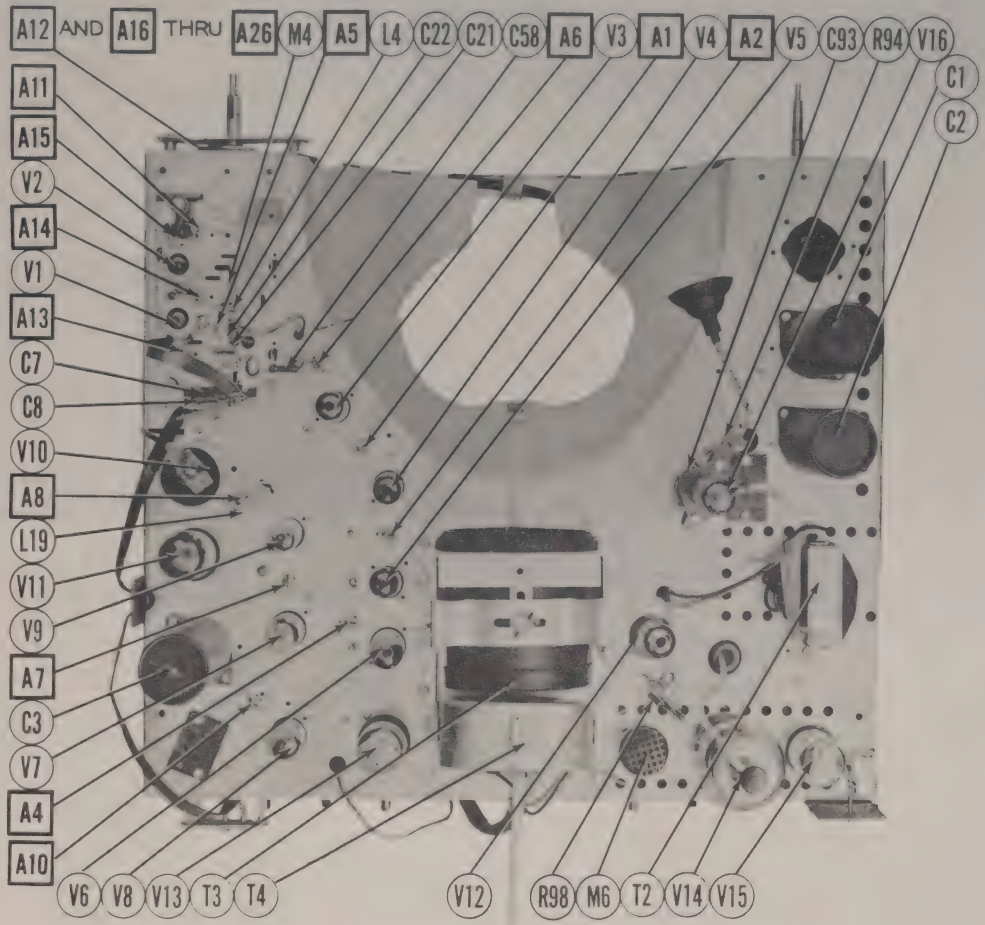
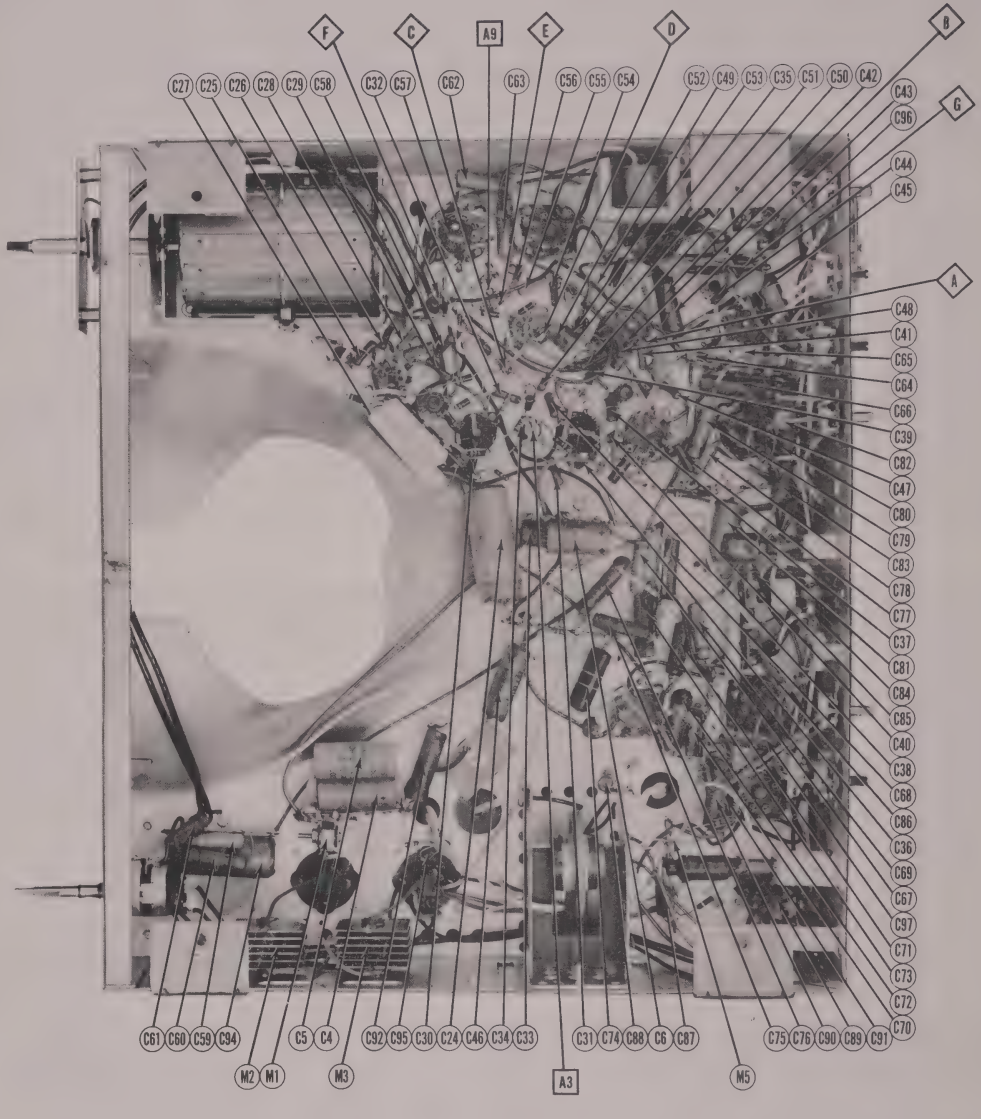
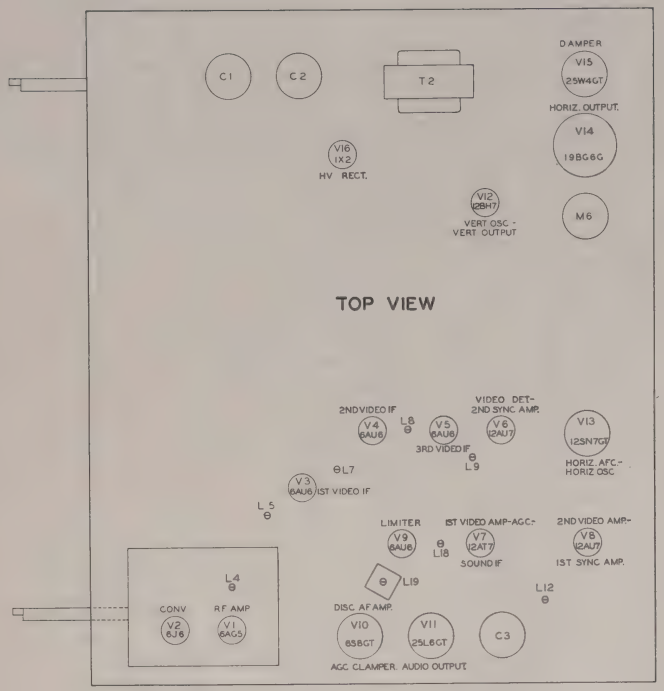


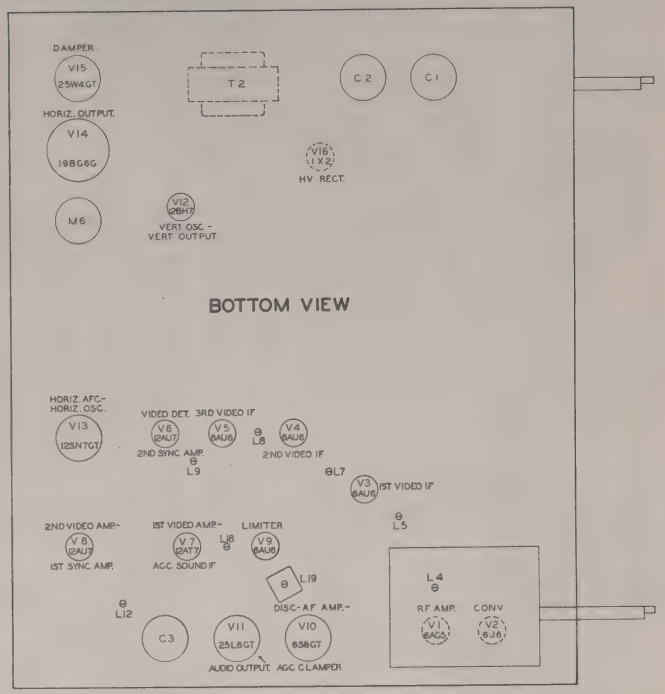
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW–CAPACITOR AND ALIGNMENT IDENTIFICATION

EMERSON MODELS
650D, 654D, 655D (Ch. 120123-B)





TUBE PLACEMENT CHART

650D, 654D, 655D (Ch. 120123-B)

EMERSON MODELS

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect the negative terminal of a 3 volt battery to the junction of R32 and C24 and positive terminal to B-.
It should be noted that both terminals of the VTVM are at a potential of approximately 150 volts with respect to chassis. Avoid touching of grounding the VTVM case.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (Grid) of 6AU6 (V3). Low side to B-.	Not used	25.5MC (Unmod.)	Any	Use VTVM. DC Probe to Point (A). Common to Point (B).	A1	Adjust for maximum response. Attenuate signal generator to maintain a maximum 1 volt reading.
2.	.001MFD	"	"	22.9MC	"	"	A2	"
3.	.001MFD	"	"	21.25MC	"	"	A3	Adjust for MINIMUM deflection. Repeat step 2.
4.	.001MFD	"	"	23.9MC	"	"	A4	Adjust for maximum deflection.
5.	Direct	High side to ungrounded tube shield floating over dummy converter tube.	24.5MC (10MC SWP)	21.25MC 25.75MC	"	Vert. Amp. thru detector probe as shown in figure 1 to pin 1 (Grid) of 6AU6 (V4). Low side to point (C).	A5, A6,	Adjust to place 21.25MC and 25.75MC markers on response curve similar to figure 2. Markers should be 20% down from maximum response.
6.	Direct	"	"	22.6MC 25.75MC 21.25MC	"	Vert. Amp. thru 10KΩ to Point (A). Low side to Point (B).		Check for response curve similar to figure 3. 22.6MC and 25.75MC markers should be at 25% of response. If necessary, SLIGHTLY retouch A1, A2 and A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to pin 2 (Grid) of 12AT7 (V7). Low side to Point C .	4.5MC	Any	DC Probe thru 10KΩ to Point (D). Common to Point (C).	A7	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 1 volt reading.
8.	.001MFD	"	"	"	DC Probe to Point (E). Common to B-.	A8	"
9.	.001MFD	"	"	"	DC Probe to Point (F). Common to B-.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to pin 2 (Grid) of 12AT7 (V7). Low side to Point C .	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. thru 10KΩ to Point (D). Low side to Point (C).	A7	Adjust for maximum amplitude and symmetry as per figure 4.
8.	.001MFD	"	"	"	"	Vert. Amp. to Point (F). Low side to B-.	A8. A9	Adjust A9 to place 4.5MC at center of diagonal line as per figure 5. Adjust A8 for maximum amplitude and straightness of diagonal line. Continue with step 10.

4.5MC TRAP ADJUSTMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to Point A . Low side to Point B .	4.5MC	Any	DC Probe thru detector probe to Point (G). Common to B-.	A10	Adjust for MINIMUM deflection.

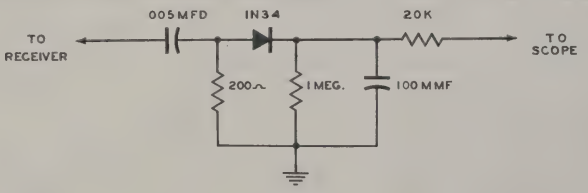


FIG. 1

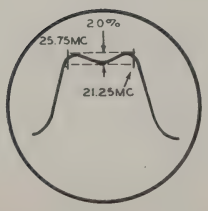


FIG. 2

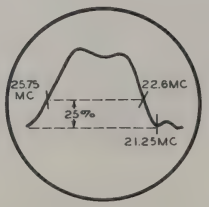


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

RF TUNER ALIGNMENT

The overall oscillator circuit adjustment A-11 is pre-set at the factory and should not require adjustment in the field.
Remove the dummy converter tube and replace with original 6J6 in its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	209.75MC	12	Vert. Amp. thru 10KΩ to Point (A). Low side to Point (B).	A12	Adjust to place 21.25MC marker on response curve as shown in figure 6.
12.	"	"	"	"	"	"	A13, A14, A15	Adjust to shape response curve similar to figure 6 and for maximum amplitude and proper bandwidth.
13.	"	"	213MC (10MC SWP)	215.75MC	13	"	A16	Adjust to place marker as in step 11.
			201MC (10MC SWP)	203.75MC	11		A17	
			195MC (10MC SWP)	197.75MC	10		A18	
			189MC (10MC SWP)	191.75MC	9		A19	
			183MC (10MC SWP)	185.75MC	8		A20	
			177MC (10MC SWP)	179.75MC	7		A21	
			85MC (10MC SWP)	87.75MC	6		A22	
			79MC (10MC SWP)	81.75MC	5		A23	
			69MC (10MC SWP)	71.75MC	4		A24	
			63MC (10MC SWP)	65.75MC	3		A25	
			57MC (10MC SWP)	59.75MC	2		A26	

FIG. 4

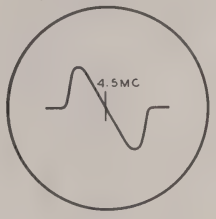


FIG. 5

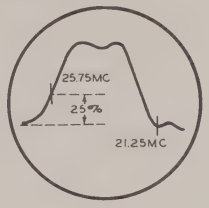


FIG. 6

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six phillips head wood screws holding rear cover in place. Remove cover.
3. Disconnect built-in antenna.
4. Disconnect speaker from chassis.
5. Remove four 7/16" hex head bolts holding chassis in place. Remove chassis.
6. Remove two 5/16" hex nuts holding speaker in place. Remove speaker.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1VDC	0V.	103VAC	110VAC	105VDC	105VDC	0V.		
V 2	6J6	95VDC	80VDC	97VAC	103VAC	-1.3VDC	§-3.2VDC	0V.		
V 3	6AU6	-.6VDC	0V.	37VAC	31VAC	120VDC	120VDC	.6VDC		
V 4	6AU6	#0V.	#1.4VDC	31VAC	25VAC	#120VDC	#120VDC	#1.4VDC		
V 5	6AU6	#0V.	#1.4VDC	25VAC	18VAC	#120VDC	#120VDC	#1.4VDC		
V 6	12AU7	#-120VDC	#-120VDC	#-120VDC	4.8VAC	4.8VAC	#85VDC	#-2VDC	#0V.	12VAC
V 7	12AT7	#125VDC	#0V.	#2.4VDC	11VAC	11VAC	100VDC	-1.9VDC	-1.5VDC	17VAC
V 8	12AU7	240VDC	-1.3VDC	7.3VDC	18VAC	18VAC	20VDC	-.7VDC	0V.	12VAC
V 9	6AU6	#-.5VDC	#0V.	17VAC	23VAC	#120VDC	#30VDC	#0V.		
V 10	6S8GT	-.3VDC	0V.	-.3VDC	-.9VDC	.2VDC	50VDC	4.8VAC	11VAC	TOP CAP -.4VDC
V 11	25L6GT	0V.	49VAC	110VDC	115VDC	-6VDC 0V.	-19VDC 0V.	75VAC	2.2VDC	
V 12	12BH7	320VDC	-5VDC -6VDC	0V.	37VAC	49VAC	36VDC 23VDC	-1.4VDC	6VDC 3.4VDC	43VAC
V 13	12SN7GT	-55VDC	210VDC	0V.	-1.8VDC	170VDC 95VDC	5.5VDC	23VAC	35VAC	
V 14	19BG6G	0V.	35VAC	0V.	-15VDC	-15VDC	0V.	55VAC	250VDC	TOP CAP *
V 15	25W4GT	0V.	0V.	380VDC	0V.	250VDC	0V.	55VAC	78VAC	
V 16	1X2	* DO NOT MEASURE.								
V 17	12LP4	0V.	1.4VDC	PIN 10 340VDC	PIN 11 110VDC 11VDC	PIN 12 4.8VAC				

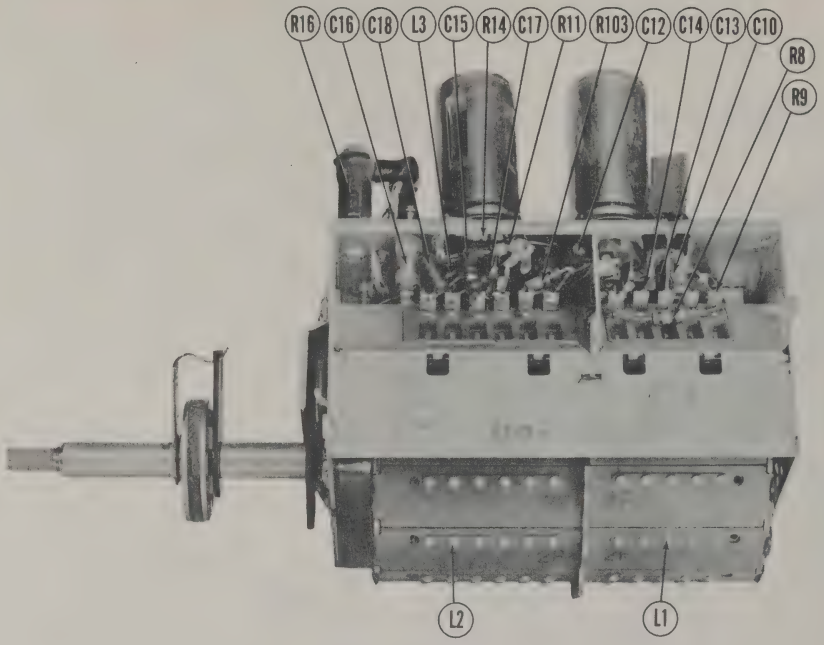
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM PIN 7 OF V9.
* DO NOT MEASURE.

RESISTANCE READINGS

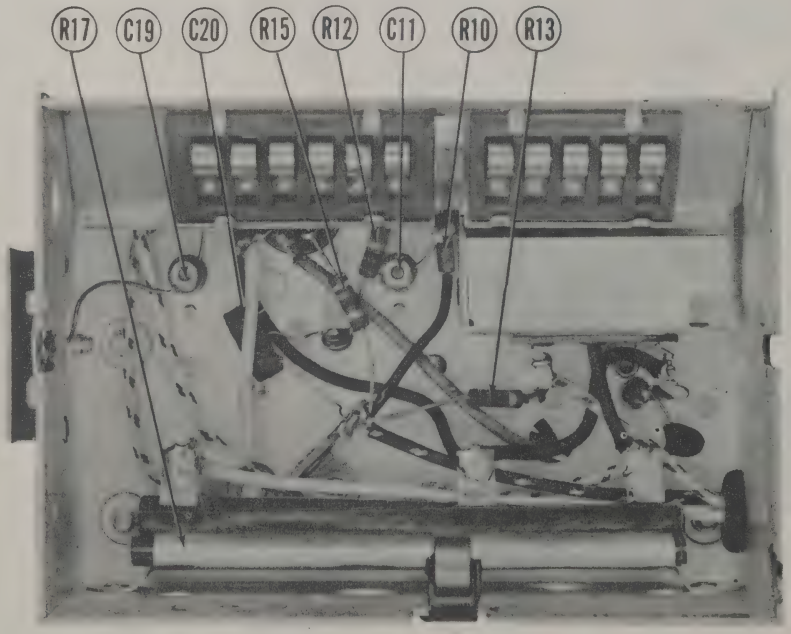
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.2 Meg.	0Ω	62Ω	65Ω	#2.2KΩ	#2.2KΩ	0Ω		
V 2	6J6	#4.7KΩ	#10KΩ	59Ω	62Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.2 Meg.	3.3Ω	24Ω	21Ω	†30KΩ	†30KΩ	82Ω		
V 4	6AU6	#470Ω	#180Ω	21Ω	18Ω	†500Ω	†500Ω	#180Ω		
V 5	6AU6	#470Ω	#180Ω	18Ω	15Ω	†500Ω	†500Ω	#180Ω		
V 6	12AU7	140KΩ	140KΩ	135KΩ	8Ω	8Ω	†4.7KΩ	#1 Meg.	#0Ω	11Ω
V 7	12AT7	†90Ω	#2.7Ω	#4.7KΩ	11Ω	11Ω	†34KΩ	140KΩ	135KΩ	15Ω
V 8	12AU7	†5.6KΩ	1 Meg.	5KΩ	15Ω	15Ω	22KΩ	3.3 Meg.	0Ω	11Ω
V 9	6AU6	#100KΩ	#0Ω	15Ω	19Ω	†2.3KΩ	†22KΩ	#0Ω		
V 10	6S8GT	100KΩ	0Ω	100KΩ	1.2 Meg.	200KΩ	†470KΩ	8Ω	11Ω	TOP CAP 4.7 Meg
V 11	25L6GT	0Ω	28Ω	†4KΩ	†3.8KΩ	470KΩ 560KΩ	35KΩ 20Ω	37Ω	68Ω	
V 12	12BH6	▲2.6KΩ	1 Meg.	0Ω	24Ω	28Ω	†2.7 Meg. †5.7 Meg	100KΩ	168KΩ 68KΩ	26Ω
V 13	12SN7GT	250KΩ	▲80KΩ	0Ω	1 Meg.	†75KΩ †100KΩ	300KΩ	19Ω	26Ω	
V 14	19BG6G	Inf.	26Ω	0Ω	1 Meg.	1 Meg.	Inf.	32Ω	†90Ω	TOP CAP ▲78Ω
V 15	25W4GT	Inf.	Inf.	270KΩ	Inf.	†105Ω	Inf.	32Ω	38Ω	
V 16	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲470KΩ
V 17	12LP4	0Ω	1 Meg.	PIN 10 ▲4.7KΩ	PIN 11 100KΩ 37KΩ	PIN 12 8Ω				

MEASURED FROM PIN 7 OF V9.
† MEASURED FROM OUTPUT OF M3.
▲ MEASURED FROM PIN 3 OF V15.

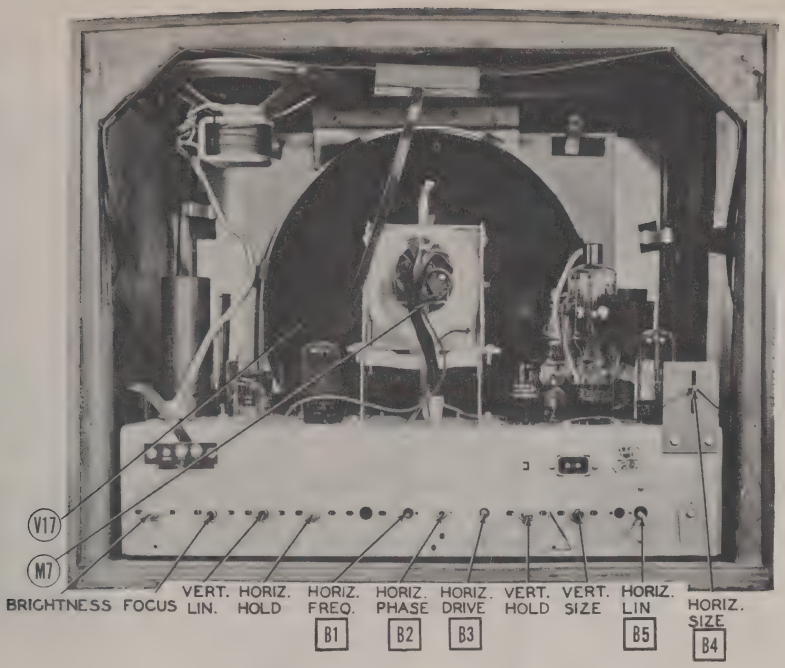
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

Connect a jumper wire across capacitor C84. Turn set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control fully counter-clockwise and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

HORIZONTAL PHASING ADJUSTMENT

Remove the short from across capacitor C84 and connect the vertical input lead of an oscilloscope thru a 10KΩ resistor to the junction of R86 and L21 and B-.

The pattern on the scope should be similar to figure 7. Adjust the horizontal phasing slug (B2) until the broad and narrow peaks are of equal amplitude.

Momentarily remove the signal by switching to another channel and back again. The picture should be out of sync with 4 to 5 horizontal blanking bars appearing. If more or less than 4 to 5 bars are present, readjust B1 until 4 to 5 bars are seen.

Turn the hold control slowly clockwise 1/4 of a turn. The picture should be in synchronization and remain in sync over the entire range of the hold control.

HORIZONTAL DRIVE, SIZE, AND LINEARITY ADJUSTMENTS

Turn the horizontal drive trimmer (B3) clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug B4 until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B5) for best linearity from left to right.

A slight readjustment of B3 may be necessary for optimum results.

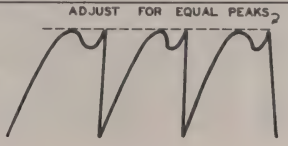


FIG. 7

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	800535	6AG5	7BD	
B	RF Amp.	800052	6BC5	7BD	
C	RF Amp.	6CB6	6CB6	5BT	
V2	Converter	800536	6J6	7BF	
V3	1st Video IF	800533	6AU6	7BK	
V4	2nd Video IF	800533	6AU6	7BK	
V5	3rd Video IF	800533	6AU6	7BK	
V6	Video Det. -2nd Sync. Amp.	800026	12AU7	9A	
V7	Sound IF Amp. - 1st Video Amp. - AGC	800047	12AT7	9A	
V8	1st Sync. Amp. - 2nd Video Amp.	800028	12AU7	9A	
V9	Limiter	800533	6AU6	7BK	
V10	Sound Discr. AGC Clamp. - AF Amp.	800015	6S8GT	8CB	
V11	Audio Output	800490	25L6	7AC	
V12	Vert. Osc. - Vert. Output	800053	12BH7	9A	
V13	Hor. AFC - Hor. Osc.	800039	12SN7GT	8BD	
V14	Hor. Output	800040	19BH6G	5BT	
V15	Damper	800045	25W4GT	4CG	
V16	HV Rect.	800046	1X2	7CB	
V17	Picture Tube	810003	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	200	150	925166-1	E4A75		UPE20015		TVL-1431	Voltage Doubler Cap.
C2A	130	300	925168-2	E4C243		UP1CJ 1244		TVL-3765	▲ Filter ■ Vert. Output Dec. ▲ Decoupling
B	15	450							▲ Filter
C	10	450							■ Decoupling
C3A	120	500	925181	E4C245		UP1CJ 1263		TVL-3585	▲ Decoupling ▲ Filter
B	50	300							
C	40	350							
C4	30	150	925070-1	PRS150/30		BR3015A		TVA-1412	Filter
C5	30	150	925070-1						Filter
C6	4	200	925070-2	PRS430/4		BR435		TVA-1501	1st V. Amp. Cath.
C7	1500			GP1500M	D6-152		GP2L-0015		Ant. Coupling
C8	1500			GP1500M	D6-152		GP2L-0015		Ant. Coupling
C9	5			S1SDNPO	TCZ-4.7		NPOK-5		Fixed Trimmer *
C10	5-3				829-3				Variable Trimmer
C11	5-3				829-3				Variable Trimmer
C12	120			GP130M		D6-121	GP2K-120		RF Decoupling
C13	[illegible]			BPD-001	DD-102		811-001	29C4	RF Fil. Bypass
C14	[illegible]			BPD-001	DD-102		811-001	29C4	RF Fil. Bypass
C15	100			S1100N750	TCN-100		N750L-100		RF Coupling
C16	5-3				829-3				Variable Trimmer
C17	20			S2NKNPO	TCZ-20		NPOK-20		Osc. Grid Cap.
C18	[illegible]			S1SDN750	TCN-10		N750K-10		Fixed Trimmer
C19	5-3				829-3				Variable Trimmer
C20A	[illegible]		RPD-3 ± 001	DD-3-102			882-2 x 0015	29C7	RF Bypass
B	[illegible]								Conv. Fil. Bypass
C21	[illegible]			BPD-001	DD-102		811-001	29C4	Conv. Plate Dec.
C22	[illegible]			S1SDN750	TCN-10		N750K-10		Fixed Trimmer
C23	1500			GP1500M	D6-152	1WSD15	GP2L-0015		RF Bypass
C24	2.5	50	923301	PSS2-.5					AGC Filter
C25	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	AGC Filter
C26	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C27	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	1st V. IF Dec.
C28	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	1st V. IF Fil.
C29	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	2nd V. IF Grid Dec.
C30	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	2nd V. IF Cath.
C31	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	2nd V. IF Dec.
C32	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	2nd V. IF Fil.
C33	.2	300	923301	P488-.22		GT4P2		TM-2-2	AGC Filter
C34	62			CN62JN750	TCN-62		N750L-62		Fixed Trimmer
C35	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	3rd V. IF Grid Dec.
C36	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	3rd V. IF Cath.
C37	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	3rd V. IF Dec.
C38	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	3rd V. IF Fil.
C39	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C40	5		928023	GP5M	TCZ-4.7	SWSY5	GPK-5	MS-55	V. Diode Filter
C41	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	1st V. Amp. Cath.
C42	300	500	910047	1468-0002	D6-201	SW5T2	GP2K-200	1FM-32	Peaking
C43	.05	400	923052	P488-.05	PF-503	PTE4S5		TM-15-4	Video Coupling
C44	47	500		1469-00005	TCZ-47	SR5Q5	NPOM-50	MS-45	Fixed Trimmer
C45	.05	400	923052	P488-.05	PF-503	PTE4S5		TM-15-4	Video Coupling
C46	.1	400	923064	P488-1	DF-104	PTE4P1		TM-1-4	Pic. Tube Cath. Dec.
C47	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	V. Det. Fil. Byp.
C48	500	500	910007	GP500M	D6-501	SWT5	GPK-500	1FM-205	S. IF Coupling
C49	240		928031	GP250M	D6-251	SW5T25	GP2K-240	1FM-235	S. IF Cath. Byp.
C50	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	S. IF Fil. Byp.
C51	47	500	915006-1	1469-00005	TCZ-47	SR5Q5	NPOM-50	MS-45	Fixed Trimmer
C52	47	500	910033	1468-00005	D6-470	SW5Q5	GPK-47	1FM-45	S. IF Coupling
C53	1500			GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C54	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C55	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	Limiter Screen
C56	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	Limiter Plate Dec.
C57	130	500	910043	1468-0001	D6-101	SW5T1	GPK-100	1FM-31	RF Bypass
C58	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C59	.008	600	923079	P688-.008	D6-102	PTE5D1	GP2L-001	TM-21	De-emphasis
C60	.01	400	923091	P488-.01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C61	.002	600	923088	P688-.002	D6-202	PTE5D2	GP2M-002	TM-22	Audio Coupling
C62	.01	400	923091	P488-.01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C63	.01	400	923011	P488-01	D6-103	PTE4S1	811-01	TM-11-4	Output Plate Byp.
C64	200	500	910047	1468-0002	D6-201	SW5T2	GP2K-200	1FM-32	Peaking
C65	.01	600	923032	P688-01	D6-103	PTE6S1	811-01	TM-11	Sync. Coupling
C66	.05	400	923062	P488-05	DF-503	PTE4S5		TM-15-4	Sync. Coupling
C67	.001	600	923079	P688-001	D6-101	PTE5D1	GP2L-001	TM-21	Integrator Network
C68	.002	600	923088	P688-002	D6-202	PTE5D2	GP2M-002	TM-22	Integrator Network
C69	.006	600	923092	P688-006	D6-562	PTE5D6	GP2M-0056	TM-26	Integrator Network
C70	.001	600	923079	P688-001	D6-101	PTE5D1	GP2L-001	TM-21	Vert. Osc. Grid
C71	.001	600	923021	P688-001	D6-102	PTE5D1	GP2L-001	TM-21	Vert. Feedback
C72	.1	200	922014	P288-1	DF-104	PTE4P1		TM-1-2	Vert. MV Cath.
C73	.033	600	922024	P688-033		PTE6S3		TM-13	Vert. Discharge
C74	.1	400	922008	P488-1	DF-104	PTE4P1		TM-1	Vert. Sweep Coupling
C75	.002	600	923088	P688-002	D6-202	PTE5D2	GP2M-002	TM-22	Vert. Sweep Coupling
C76	.002	600	923088	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Voltage Divider
C77	180	500	910043-2	1468-0002	D6-181	SW5T2	GP2K-180	1FM-32	Hor. Sync. Coupling
C78	220	500	910028	1468-0002	D6-221	SW5T2	GP2K-220	1FM-32	Voltage Divider
C79	.002	600	923088	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Hor. Sync. Coupling
C80	.02	400	923114	P488-02	DF-203	PTE4S2		TM-12-4	AFC Filter
C81	2	200	923091	P488-22		GT4P2		TC-2-4	AFC Filter
C82	.05	400	923062	P488-05	DF-503	PTE4S5		TM-15-4	Hor. AFC Plate Byp.
C83	200	500	910047	1468-0002	D6-201	SW5T2	GP2K-200	1FM-32	Hor. Osc. Grid
C84	.01	600	923041	P688-01		PTE6S1	811-01	TM-11	Fixed Trimmer
C85	1200	500	910044		D6-122		GP2L-0012		Hor. Discharge
C86	390	500	910021	1468-0004	D6-391	SW5T4	GP2K-390	1FM-34	Hor. Sweep Coupling
C87	5	1000	910045	1469-HV-000005					Hor. Feedback
C88	.002	600	923088	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Hor. Sweep Coupling
C89	680	1000	928054						Fixed Trimmer
C90	.033	600	922024	P688-033					Damper Filter
C91	.047	600	922023	P688-047		PTE6S5		TM-15	Damper Filter
C92	.05	400	923062	P488-05	DF-503	PTE4S5		TM-15-4	Line Isolation
C93	500	10000	923015	BV10A	TV1-501				HV Filter
C94	.5	200	923102	P288-.5		GT2P5		TM-5-2	Hor. Sweep Coupling
C95	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C96	1500		928006	GP1500M	D6-152	1WSD15	GP2L-0015	1FM-215	RF Bypass
C97	.05	400	923062	P488-05	DF-503	PTE4S5		TM-15-4	Line Filter
C98	.1	200	922014	P288-1	DF-104	PTE4P7		TM-1-2	Bias Filter *
C99	.25	400		P488-25		GT4P25		TM-2-4	Line Isolation *

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	690074-6	Concentrikit Bi7-114 * Bi3-137 * E-187 * 76-1 *	RTV-100	SBB-647-8	Contrast control-front
B	1 Meg.	½					Volume control-rear
C	Shaft End						Attach per instr. in "Concentrikit".
D	Switch						Attach per instr. in "Concentrikit".
R2A	100KΩ	½	390134-1	Qil-128	AG-49-S	AN-40	Brightness control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R2A per instructions
R3A	100KΩ	½	390132	Qil-128	AG-49-S	AN-40	Focus control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	100KΩ	½	390132	Qil-128	AG-49-S	AN-40	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	100KΩ	½	390134-1	Qil-128	AG-49-S	AN-40	Horiz. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	100KΩ	½	390134-1	Qil-128	AG-49-S	AN-40	Vert. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	1 Meg.	½	390133	Qil-140	AG-64-S	AN-84	Vert. size control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R7A per instructions

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R8	3900Ω	½		BTS-3900	RF Coil Shunt
R9	47KΩ 20%	½		BTS-47K	AGC Network
R10	2200Ω 20%	½		BTS-2200	RF Decoupling
R11	470Ω	½		BTS-470	Conv. Grid
R12	220KΩ 20%	½		BTS-220K	Conv. Grid
R13	10KΩ	½		BTS-10K	Conv. Decoupling
R14	10KΩ	½		BTS-10K	Osc. Grid
R15	4700Ω	½		BTS-4700	Osc. Plate Load
R16	10Ω	5		1 3/4A-10	Filament Dropping-Wire Wound
R17A	2Ω	10			Filament Shunt-Wire Wound
B	42Ω	20			Filament Shunt-Wire Wound
R18	470Ω 20%	½	350412	BTS-470	AGC Network
R19	5600Ω	½	340672	BTS-5600	1st Video IF Transformer Shunt
R20	82Ω 20%	½	340232	BTS-82	1st Video IF Cathode
R21	470Ω 20%	½	350412	BTS-470	1st Video IF Decoupling
R22	470Ω 20%	½	350412	BTS-470	AGC Network
R23	3KΩ	½	340732		2nd Video IF Transformer Shunt
R24	180Ω	½	340312	BTS-180	2nd Video IF Cathode
R25	470Ω 20%	½	350412	BTS-470	2nd Video IF Decoupling
R26	470Ω 20%	½	350412	BTS-470	AGC Network
R27	10KΩ	½	340732		Trap Coil Shunt
R28	10KΩ	½	340732		3rd Video IF Transformer Shunt
R29	180Ω	½	340312	BTS-180	3rd Video IF Cathode
R30	470Ω 20%	½	350412	BTS-470	3rd Video IF Decoupling
R31	10KΩ	½	340732	BTS-10K	4th Video IF Transformer Shunt
R32	68KΩ	½	340932	BTS-68K	AGC Network
R33	1 Meg. 20%	½	351212	BTS-1 Meg.	AGC Network
R34	4700Ω 5%	½	340652	BTS-4700-5%	Video Det. Diode Load
R35	27KΩ	1	370832	BTA-27K	1st Video Amp. Cathode
R36	2200Ω 20%	½	340572	BTS-2200	1st Video Amp. Plate Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R37	2200Ω 20%	½	340572	BTS-2200	1st Video Amp. Plate Load
R38	1 Meg. 20%	½	351212	BTS-1 Meg.	2nd Video Amp. Grid
R39	5600Ω	1	370872	BTA-5600	2nd Video Amp. Plate Load
R40	15KΩ	½	340772	BTS-15K	Peaking Coil Shunt
R41	1 Meg. 20%	½	351212	BTS-1 Meg.	Picture Tube Grid
R42	150KΩ	½	340912	BTS-150K	Voltage Divider
R43	15KΩ	½	340772	BTS-15K	Voltage Divider
R44	22KΩ	½	340812	BTS-22K	Voltage Divider
R45	4700Ω 5%	½	340652	BTS-4700-5%	Sound IF Cathode
R46	100KΩ	½	340972		Limiter Grid
R47	22KΩ	½	340812		Limiter Screen
R48	2200Ω 20%	½	340572	BTS-2200	Limiter Plate Decoupling
R49	820Ω	½	340712	BTS-8200	Bleeder
R50	100KΩ	½	340972		Disc. Diode Load
R51	100KΩ	½	340972		Disc. Diode Load
R52	68KΩ	½	340932	BTS-68K	De-emphasis
R53	4.7 Meg. 20%	½	351372	BTS-4.7 Meg.	AF Amp. Grid
R54	470KΩ 20%	½	351132	BTS-470K	AF Amp. Plate Load
R55	470KΩ 20%	½	351132	BTS-470K	Output Grid
R56	68Ω	½	340212	BW-½-68	Output Cathode
R57	22KΩ	½	340812	BTS-22K	Voltage Divider
R58	10KΩ	½	340732	BTS-10K	Isolation
R59	330KΩ 20%	½	341092	BTS-330K	Isolation
R60	3.3 Meg.	½	341332	BTS-3.3 Meg.	1st Sync. Amp. Grid
R61	22KΩ	½	340812	BTS-22K	1st Sync. Amp. Plate Load
R62	220KΩ	½	341052	BTS-220K	Voltage Divider
R63	1 Meg. 20%	½	351212	BTS-1 Meg.	2nd Sync. Amp. Grid
R64	4700Ω	1	370852	BTA-4700	2nd Sync. Amp. Plate Load
R65	22KΩ	½	340812	BTS-22K	Integrator Network
R66	22KΩ	½	340812	BTS-22K	Integrator Network
R67	39KΩ	½	340892	BTS-39K	Integrator Network-See Note 1
R68	100KΩ	½	340972	BTS-100K	HV Filter
R69	68KΩ	½	340932	BTS-68K	Vert. MV Cathode
R70	2.7 Meg.	½	331312	BTS-2.7 Meg.	Vert. MV Plate Load-See Note 2
R71	100KΩ	½	340972	BTS-100K	Vert. MV Feedback
R72	1 Meg. 20%	½	351212	BTS-1 Meg.	Vert. Output Grid
R73	150Ω	½	340532	BTS-1500	Vert. Output Decoupling
R74	100KΩ	½	340972	BTS-100K	Voltage Divider
R75	8200Ω	½	340712	BTS-8200	Voltage Divider
R76	22KΩ	½	340812	BTS-22K	Vert. Lin. Control Shunt-See Note 3
R77	820KΩ 5%	½	331192	BTS-820K-5%	Hor. AFC Grid
R78	150KΩ	½	341012	BTS-150K	Horiz. AFC Cathode
R79	150KΩ 5%	½	331012	BTS-150K-5%	Horiz. AFC Cathode
R80	8200Ω 20%	½	340712	BTS-8200	Horiz. AFC Filter
R81	2.7 Meg. 20%	½	331312	BTS-2.7 Meg.	Voltage Divider
R82	150KΩ	½	341012	BTS-150K	Voltage Divider
R83	82KΩ	½	340952	BTS-82K	Voltage Divider
R84	100KΩ 5%	½	330972	BTS-100K-5%	Horiz. Osc. Grid
R85	75KΩ 5%	½	330942		Horiz. Osc. Plate Load
R86	8200Ω	½	340712	BTS-8200	Horiz. Osc. Transformer Shunt
R87	22KΩ	½	340812	BTS-22K	Horiz. Osc. Transformer Shunt
R88	150KΩ 5%	½	331012	BTS-150K-5%	Horiz. Feedback
R89	47KΩ 20%	½	340892	BTS-47K	Horiz. Feedback
R90	100Ω 20%	2			Parasitic Suppressor-See Note 4.
R91	1 Meg. 20%	½	351212	BTS-1 Meg.	Hor. Output Grid
R92	4700Ω 5%	½	340652	BTS-4700-5%	Filter
R93	220KΩ	½	341052	BTS-220K	Horiz. Feedback
R94	470KΩ	1	381132		HV Filter
R95	180KΩ	½		BTA-180K	Vert. Coupling-See Note 5
R96	1500Ω	5	394060-2	1 3/4A-1500	Filter-Wire Wound
R97	2200Ω	½	340572	BTS-2200	Filter
R98	220Ω	½	340332	BTS-220	Filament Dropping
R99	75Ω	10	394060-3	1 3/4A-75	Filament Dropping-Wire Wound
R100	5Ω	7.5	394060-4		Filament Dropping-Wire Wound
R101	220KΩ	½	341052	BTS-220K	Line Isolation
R102	470KΩ	1	381132	BTA-470K	Current Limiting
R103	10KΩ	½			RF Plate Coil Shunt

Note 1. Some models use 33KΩ resistor in this application.
Note 2. Some models use 3.3 Meg resistor in this application.
Note 3. Some models use 15KΩ resistor in this application.
Note 4. Some models use 120Ω resistor in this application.
Note 5. Some models use 150KΩ resistor in this application.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T1	43.5Ω	392Ω	738039		HVO-6		Hor. Output Trans.
		SEC. 2 350					
		Tap ② 18Ω, 120					
		SEC. 3 0Ω					
T2	1100Ω		738050		A-3037		Vert. Output Trans.
	Tap ② 20Ω						
T3A	14Ω		708036	DY-1 ②	MD-1 ②		Hor. Deflection Coil
B	67Ω						Vert. Deflection Coil
T4	2200Ω		708046				Focus Coil

② Connect 47MMF capacitor across horizontal coil.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T5	1800Ω	3.4Ω	180Ω	.6Ω	734058-1	A-3876	A-2928	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	87Ω	3.4Ω	180070		6E80S	
	CONE DIA.	V. C. DIA.				
SP2	5 7/8"	9/16"				

COILS (RF-IF)

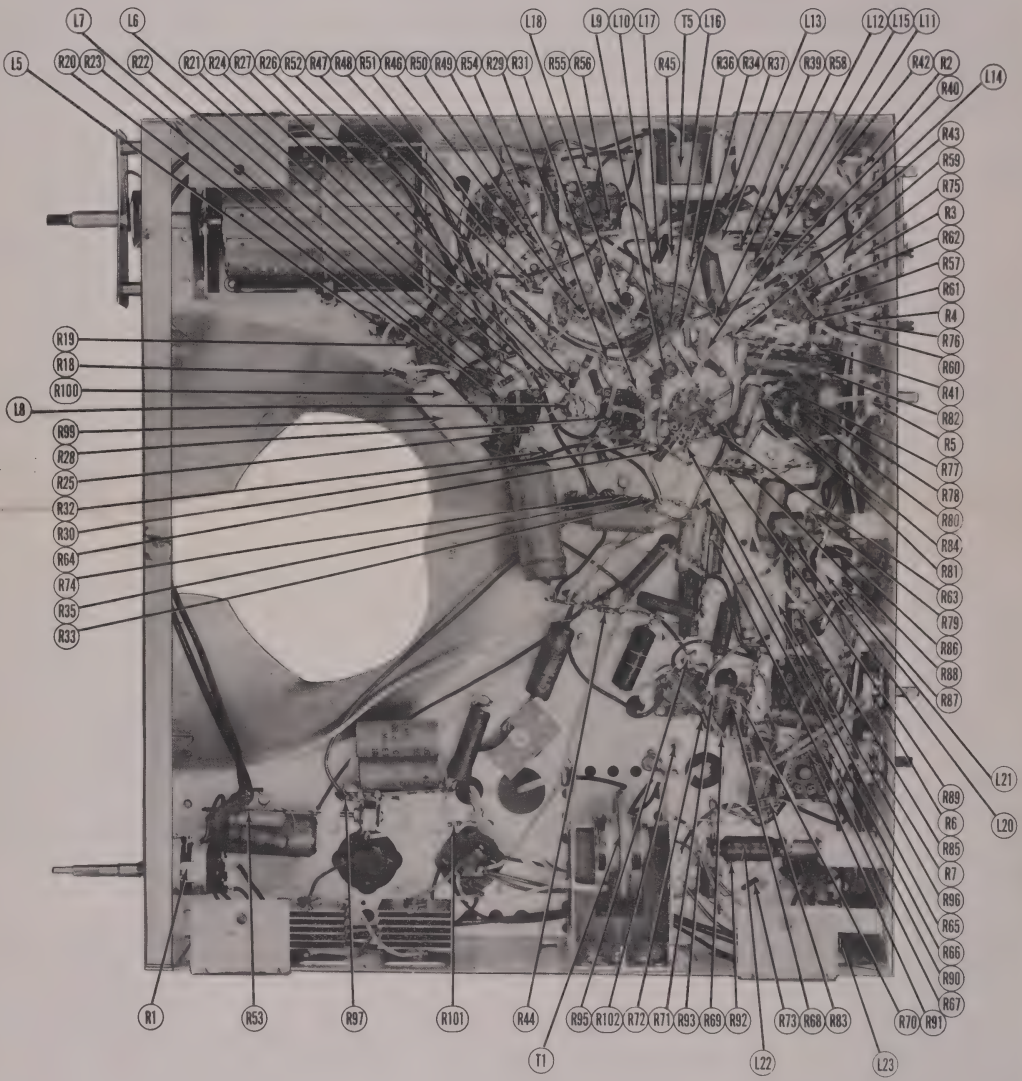
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	IRC PART No.	
L1	Ant. Coils	0Ω	0Ω				Part of tuner, part #470636
L2	RF, Mixer						
	Grid & Osc.	0Ω					Part of tuner, part #470636
L3	Fil. Choke	0Ω					Part of tuner, part #470636
L4	1st Video IF	.7Ω	.1Ω				Part of tuner, part #470636
L5	1st Video IF						
	Coupling	.1Ω	.7Ω	720104-1			
L6	RF Choke	3.3Ω		705016		CLA-3.3	3.3 microhenries
L7	2nd Video IF	.4Ω	.4Ω	720098			
L8	3rd Video IF -						
	Sound Trap	.4Ω	.4Ω	720106			
L9	4th Video IF	.4Ω	.3Ω	720098			
L10	RF Choke	3.3Ω		705016		CLA-3.3	3.3 microhenries
L11	Peaking	5.8Ω		708090	19-1920		80 microhenries, blue dot
L12	4.5MC Trap	2.1Ω		708032			
L13	Peaking	5.8Ω		708090	19-1920		80 microhenries, blue dot
L14	Peaking	9.6Ω		708095	19-1921		180 microhenries, blue dot
L15	Peaking	16Ω		708114	19-1923		440 microhenries
L16	RF Choke	2.7Ω		705014			20 microhenries
L17	RF Choke	3.3Ω		705016		CLA-3.3	3.3 microhenries
L18	Sound IF	1.4Ω		708032-1			
L19	Disc. Trans.	2.2Ω	2.2Ω	708018			
L20	Horiz. Osc.	95Ω	34Ω	716052-A			
L21	Horiz. Phase	51Ω		738037			
L22A	Horiz. Lin.	28Ω		708052			
B	Horiz. Lin.			708056			
L23	Horiz. Size	9.7Ω		708055			

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	EMERSON PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.008ADC	817001-1		8Y1	
M2	.190ADC	817015	NF-5	6Q1	
M3	.190ADC	817015	NF-5	6Q1	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4A	RF Tuner	470636	
B	RF Tuner	470640-1	
C	RF Tuner	470470	
M5	Fuse	808170	.25A
M6	Ballast Tube	397036	
M7	Ion Trap	708086	
	Trimmer	900073	Horiz. drive 45-400MMF
	Cabinet	140354	Model 650D
	Cabinet	140355	Model 654D
	Cabinet	140360	Model 655B
	Safety Glass	520127	Models 650D, 654D
	Safety Glass	635028	Model 655B
	Escutcheon	520103	Channel Selector, Standard Tuner
	Escutcheon	450028	Volume, Contrast
	Knob	450073S	Channel Selector, Models 650D, 654D
	Knob	450097S	Channel Selector, Model 655B
	Knob	450074	Fine Tuning, Models 650D, 654D
	Knob	450098	Fine Tuning, Model 655B
	Knob	450072S	Volume, Models 650D, 654D
	Knob	450096S	Volume, Model 655B
	Knob	450071	Contrast, Models 650D, 654D
	Knob	450095	Contrast, Model 655B



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

FADA MODELS

S1015, S1020, S1030

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MODEL S-1015

FADA MODELS
S1015, S1020, S1030

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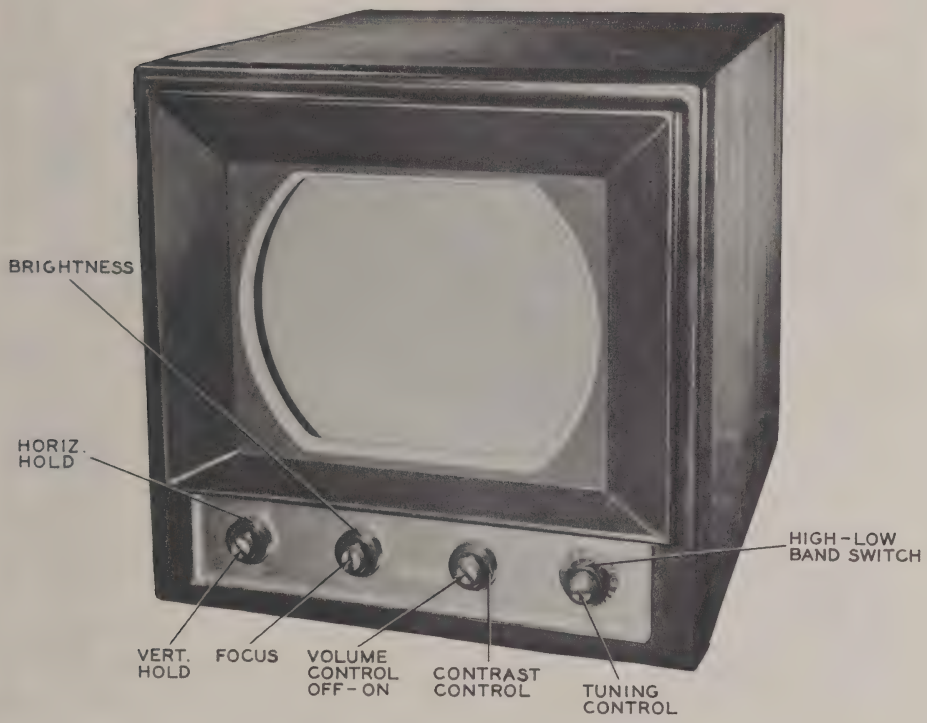

FADA MODELS
S1015, S1020, S1030

FADA MODEL S-1015

TRADE NAME	Fada, Models S-1015, S-1020, S-1030
MANUFACTURER	Fada Radio and Electric Co., Inc., Belleville, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—	Channels 2 thru 13
RATING	1.7 Amp. at 117 Volts AC

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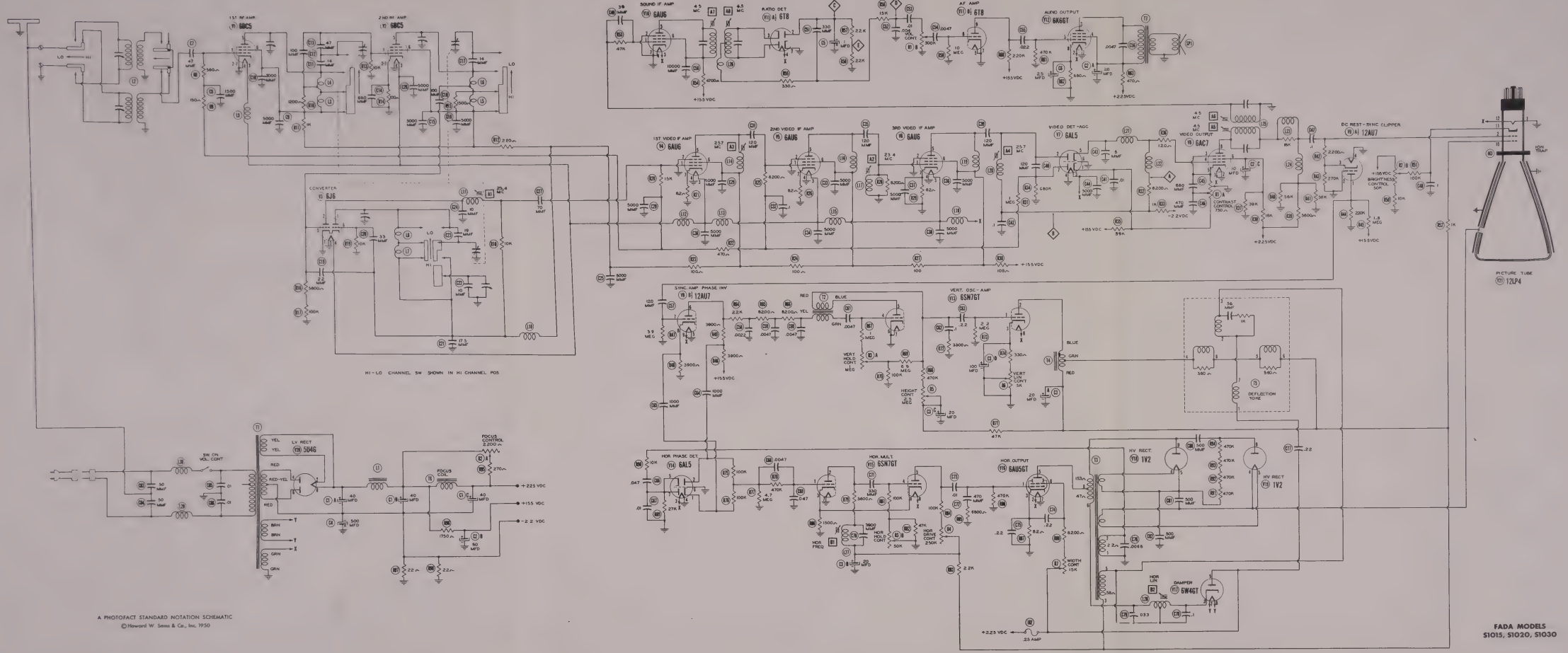
1ST RF AMP (T) 6BC5
2ND RF AMP (T) 6BC5
CONVERTER (T) 6J6
HI-LO CHANNEL SW SHOWN IN HI CHANNEL POS
SOUND IF AMP (T14) 6AU6
RATIO DET (T11) A) 6T8
AF AMP B) 6T8
AUDIO OUTPUT (T12) 6K6GT
1ST VIDEO IF AMP (T4) 6AU6
2ND VIDEO IF AMP (T5) 6AU6
3RD VIDEO IF AMP (T6) 6AU6
VIDEO DET-AGC (T7) 6AL5
VIDEO OUTPUT (T8) 6AC7
D.C. REST-SYNC CLIPPER (T9) A) 12AU7
PICTURE TUBE (T) 12LP4
ION TRAP
SYNC AMP PHASE INV (T9) B) 12AU7
VERT. OSC-AMP (T11) 6SN7GT
DEFLECTION YOKE (T)
HOR. PHASE DET. (T14) 6AL5
HOR. MULT. (T15) 6SN7GT
HOR. OUTPUT (T16) 6AU5GT
HV RECT. (T18) 1V2
HV RECT (T19) 1V2
DAMPER (T17) 5W4GT
LV RECT (T10) 5U4G
SW ON VOL. CONT
FOCUS COIL
FOCUS CONTROL 2,200Ω
+225 VDC
+155 VDC
-2.2 VDC
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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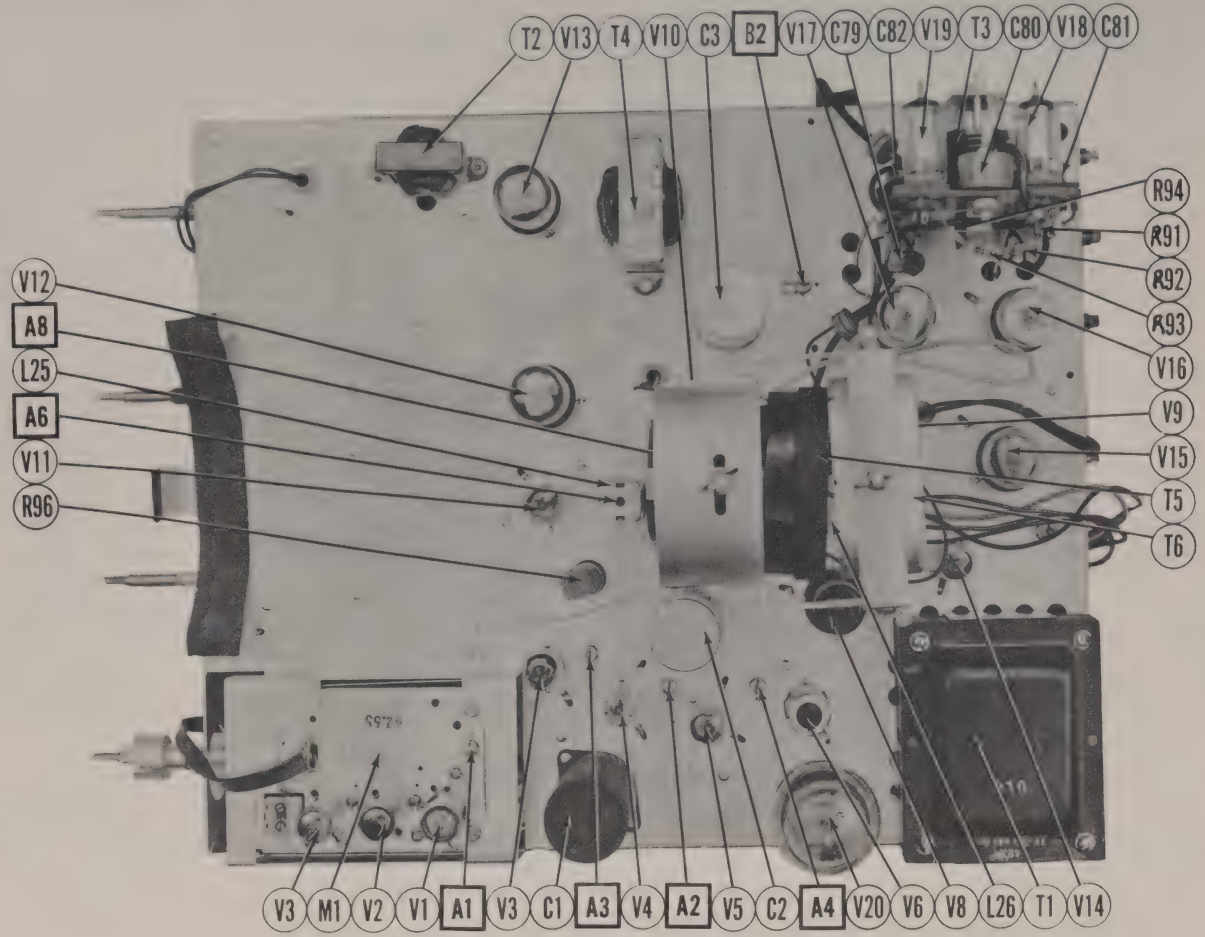
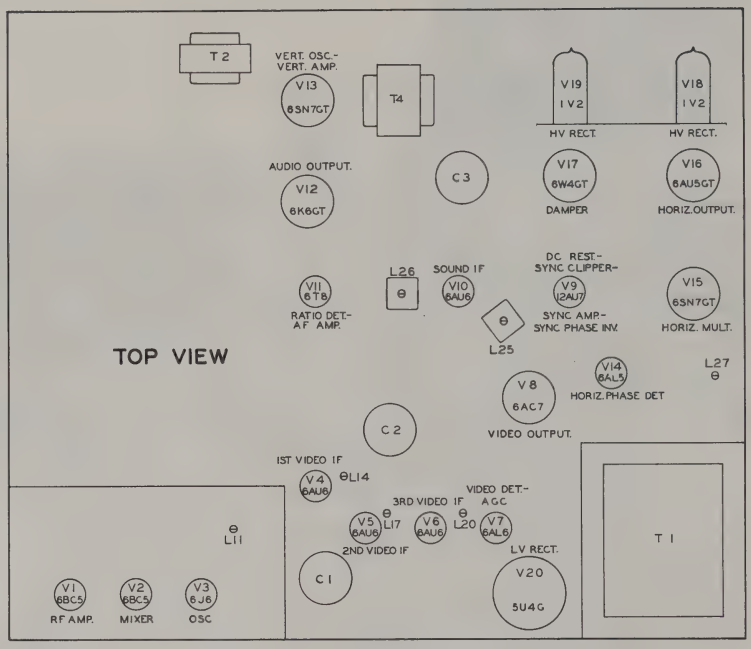
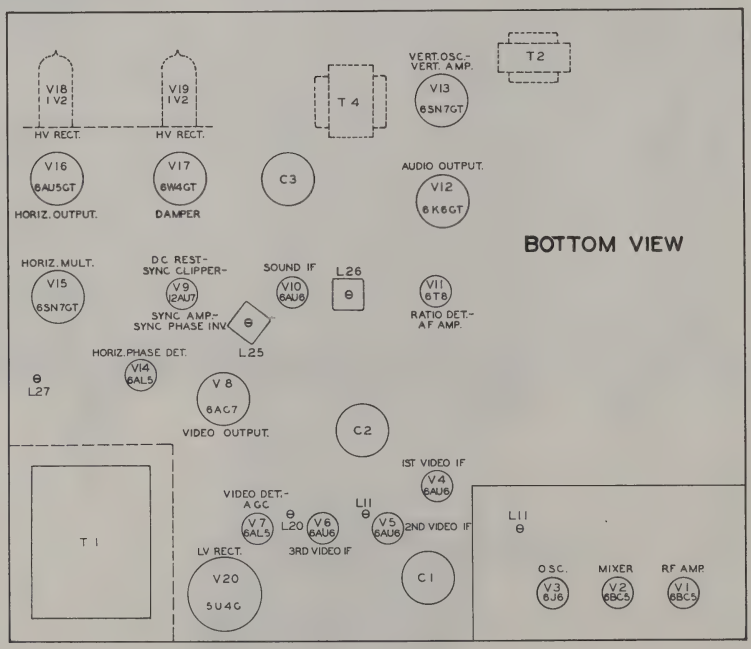
FADA MODELS S1015, S1020, S1030

FADA MODELS S1015, S1020, S1030



CHASSIS TOP VIEW





TUBE PLACEMENT CHART

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.4VDC	0V.	6.3VAC	0V.	125VDC	125VDC	0V.		
V 2	6BC5	0V.	1VDC	6.3VAC	0V.	130VDC	130VDC	1VDC		
V 3	6J6	130VDC	90VDC	0V.	6.3VAC	♦-2VDC ▲-1VDC	♦§-3.6VDC ▲§-2.7VDC	0V.		
V 4	6AU6	-.4VDC	0V.	6.3VAC	0V.	140VDC	140VDC	.8VDC		
V 5	6AU6	-.4VDC	0V.	6.3VAC	0V.	145VDC	145VDC	.5VDC		
V 6	6AU6	0V.	0V.	6.3VAC	0V.	150VDC	150VDC	.6VDC		
V 7	6AL5	2.4VDC	-2.2VDC	6.3VAC	0V.	-1.8VDC	0V.	-.2VDC		
V 8	6AC7	0V.	0V.	.8VDC	-1.8VDC	.8VDC	145VDC	6.3VAC	165VDC	
V 9	12AU7	9VDC	0V.	1.8VDC	0V.	0V.	140VDC	0V.	6.8VDC	6.3VAC
V 10	6AU6	-.7VDC	0V.	6.3VAC	0V.	105VDC	105VDC	0V.		
V 11	6T8	-.4VDC	-.8VDC	-.4VDC	6.3VAC	0V.	0V.	0V.	-.4VDC	60VDC
V 12	6K6GT	0V.	6.3VAC	210VDC	215VDC	0V.	0V.	0V.	15VDC	
V 13	6SN7GT	0V.	330VDC	19VDC 5VDC	-8VDC	165VDC 35VDC	0V.	0V.	6.3VAC	
V 14	6AL5	2.3VDC	-1.6VDC	6.3VAC	0V.	0V.	0V.	0V.		
V 15	6SN7GT	.2VDC	180VDC	7.7VDC	-2.4VDC	135VDC 70VDC	7.7VDC	0V.	6.3VAC	
V 16	6AU5GT	-4.8VDC	6.3VAC	6.7VDC	0V.	*	0V.	0V.	150VDC 125VDC	
V 17	6W4GT	0V.	0V.	305VDC	0V.	225VDC	225VDC	¶	¶	
V 18	1V2	* DO NOT MEASURE.								
V 19	1V2	* DO NOT MEASURE.								
V 20	5U4G	0V.	285VDC	0V.	300VAC	0V.	300VAC	0V.	285VDC	
V 21	12LP4	0V.	1.8VDC	PIN 10 305VDC	PIN 11 150VDC	PIN 12 6.3VAC				

♦ TUNER SWITCH IN LO BAND POSITION.
▲ TUNER SWITCH IN HI BAND POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.7 Meg.	0Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 2	6BC5	10KΩ	100Ω	.1Ω	0Ω	†2.4KΩ	†2.4KΩ	100Ω		
V 3	6J6	†2.2KΩ	†12KΩ	0Ω	.1Ω	105KΩ	10KΩ	0Ω		
V 4	6AU6	1.7 Meg.	0Ω	.1Ω	0Ω	†2.1KΩ	†2.1KΩ	82Ω		
V 5	6AU6	1.7 Meg.	0Ω	.1Ω	0Ω	†2KΩ	†2KΩ	82Ω		
V 6	6AU6	.3Ω	0Ω	.1Ω	0Ω	†1.9KΩ	†1.9KΩ	82Ω		
V 7	6AL5	.4Ω	1000Ω	.1Ω	0Ω	9.2KΩ	0Ω	680KΩ		
V 8	6AC7	0Ω	0Ω	750Ω	9.3KΩ	750Ω	†14KΩ	.1Ω	†6KΩ	
V 9	12AU7	†220KΩ	0Ω	270KΩ	0Ω	0Ω	†10KΩ	3.9 Meg.	3.9KΩ	.1Ω
V 10	6AU6	47KΩ	0Ω	.1Ω	0Ω	†6.5KΩ	†6.5KΩ	0Ω		
V 11	6T8	Inf.	44KΩ	Inf.	.1Ω	0Ω	Inf.	0Ω	10 Meg.	†220KΩ
V 12	6K6GT	Inf.	.1Ω	†1.2KΩ	†850Ω	470KΩ	Inf.	0Ω	680Ω	
V 13	6SN7GT	2.2 Meg.	#1.3KΩ	5.3KΩ 330Ω	1.1 Meg.	#500KΩ #2.2 Meg.	0Ω	0Ω	.1Ω	
V 14	6AL5	4.8 Meg.	4.8 Meg.	.1Ω	0Ω	27KΩ	0Ω	27KΩ		
V 15	6SN7GT	5.2 Meg.	#27KΩ	1.5KΩ	100KΩ	#125KΩ #375KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6AU5GT	470KΩ	.1Ω	82Ω	Inf.	#50Ω	Inf.	0Ω	†8.5KΩ †24KΩ	
V 17	6W4GT	Inf.	Inf.	1 Meg.	Inf.	†380Ω	†380Ω	Inf.	Inf.	
V 18	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	#205Ω
V 19	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
V 20	5U4G	Inf.	11KΩ	Inf.	65Ω	Inf.	65Ω	Inf.	11KΩ	
V 21	12LP4	0Ω	272KΩ	PIN 10 #1000Ω	PIN 11 110KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V20.
# MEASURED FROM PIN 3 OF V17.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V3) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications. Turn the contrast control fully counter-clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over "dummy" converter tube (V3). Low side to chassis.	23.4MC (Unmod.)	Any	DC Probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection.
2.	Direct	"	25.7MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over "dummy" converter tube (V3). Low side to chassis.	24MC (10MC SWP)	21.6MC 23.8MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 26.1MC marker should be at 50% response. If necessary, slightly retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C). Common to chassis .	A5, A6, A7	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -3 volts reading.
5.	.01MFD	"	"	"	DC Probe to Point (D). Common to Point (E).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per figure 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A8	Reconnect capacitor C5. Adjust A8 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

THE RF TUNER PORTION OF THIS RECEIVER IS PRE-ALIGNED AT THE FACTORY AND IS VERY STABLE, AND WILL NOT NORMALLY REQUIRE ADJUSTMENT IN THE FIELD.

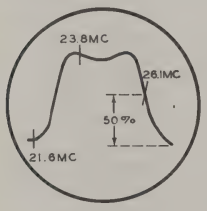


FIG. 1

FIG. 2

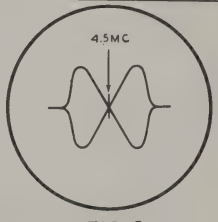
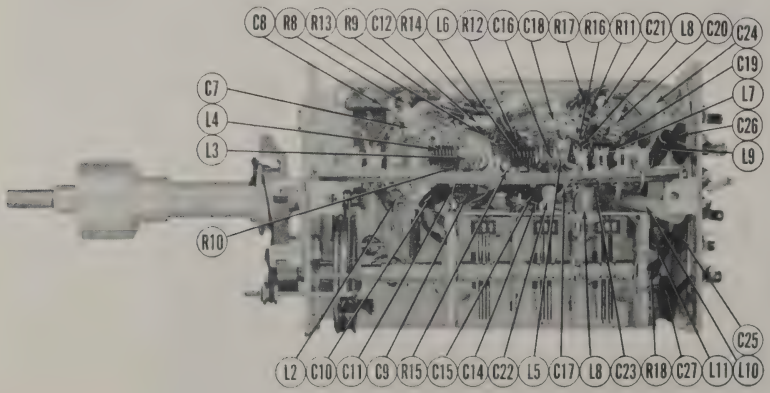
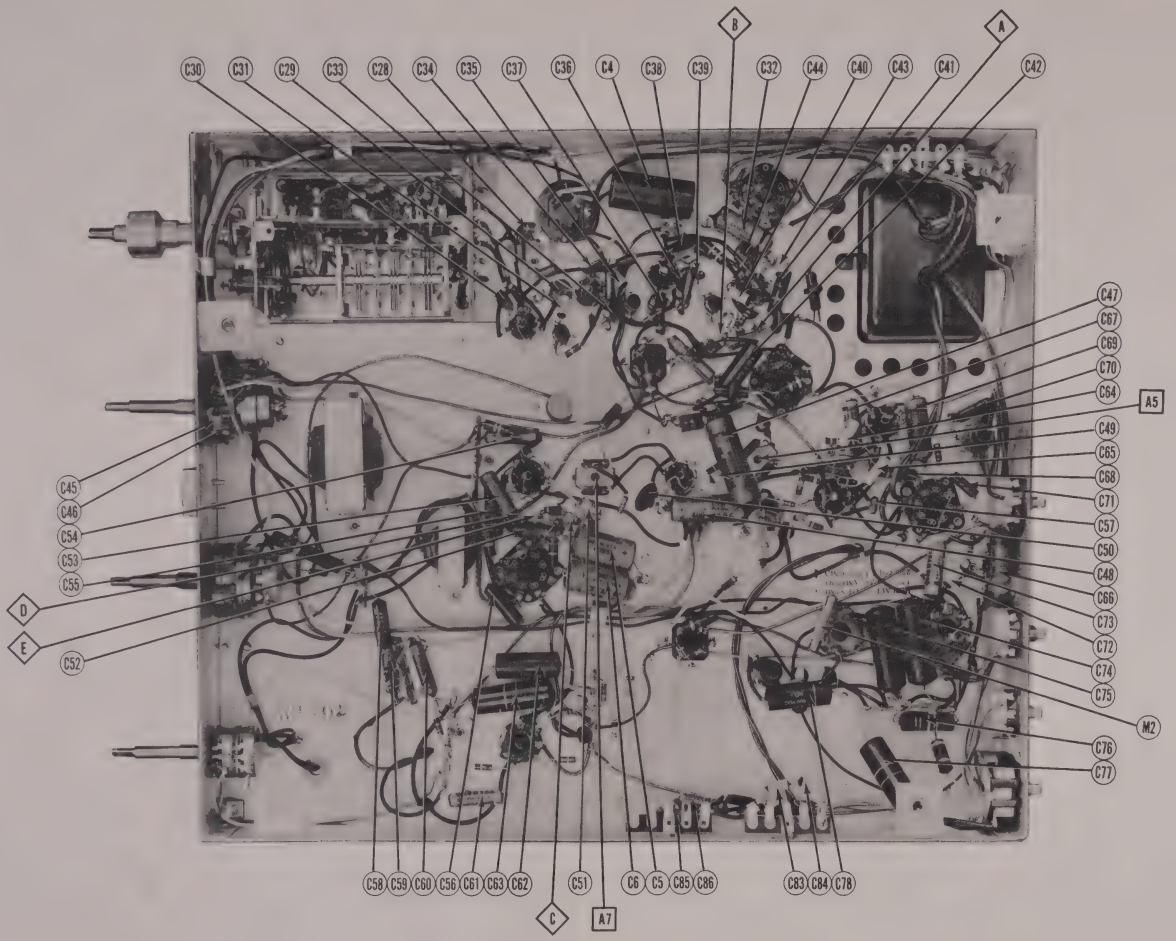


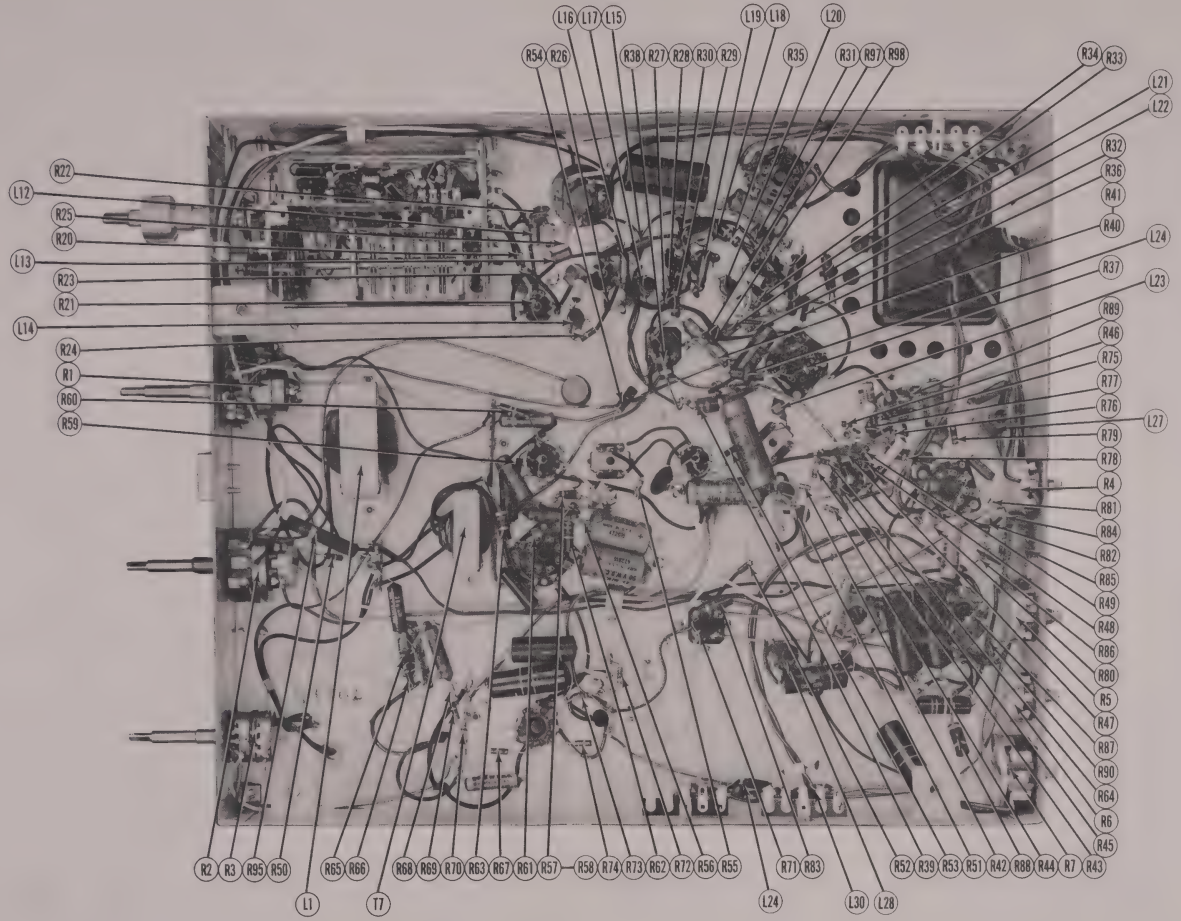
FIG. 3



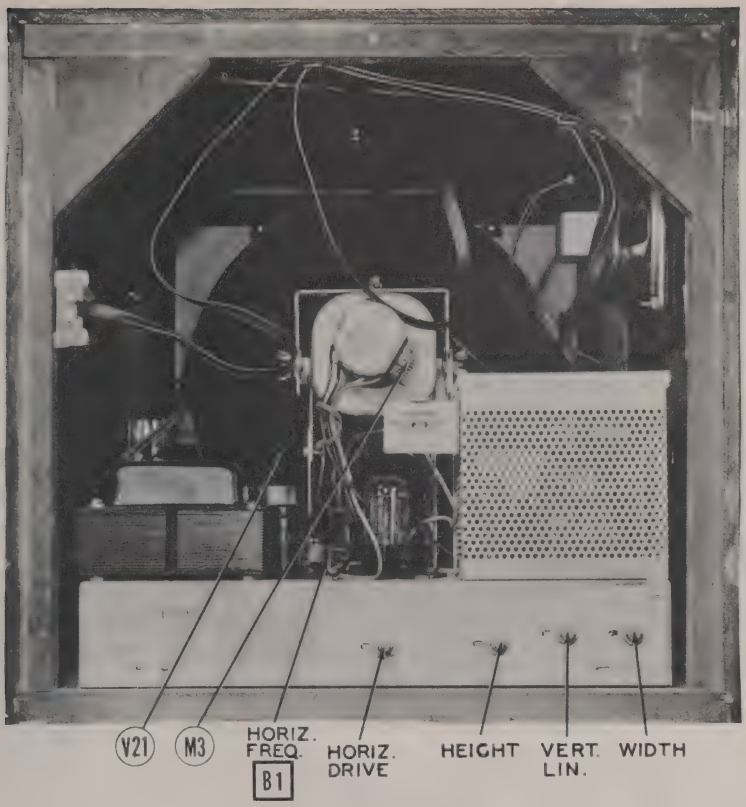
RF TUNER



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range and adjust the horizontal frequency slug B1 until the picture synchronizes horizontally.

Turn the horizontal drive control clockwise as far as possible without crowding the right side of the picture. Adjust the width control until the picture fills the mask. Adjust the horizontal linearity slug (B2) until picture is symmetrical from left to right. A slight readjustment of the horizontal drive control may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove nine wood screws holding rear cover in place. Remove cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove four 7/16" hex head bolts holding chassis to cabinet. Remove chassis.
7. Remove four 5/16" hex nuts holding speaker in cabinet. Remove speaker.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA FADA PART No.	STANDARD REPLACEMENT TYPE	RMA BASE TYPE	NOTES
V1A	1st RF Amp.	6BC5	6BC5	7BD	
B	1st RF Amp.	6AG5	6AG5	7BD	
V2A	2nd RF Amp.	6BC5	6BC5	7BD	
B	2nd RF Amp.	6AG5	6AG5	7BD	
V3	Converter	6J8	6J8	7BF	
V4	1st Video IF	6AU8	6AU8	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AU6	7BK	
V7	Video Det.-AGC	6AL5	6AL5	6BT	
V8	Video Output	6AC7	6AC7	8N	
V9	DC Rest.-Sync. Clipper-Sync. Amp.				
	Sync. Phase Inv.	12AU7	12AU7	8A	
V10	Sound IF Amp.	6AU8	6AU8	7BK	
V11	Ratio Det.-AF Amp.	6T8	6T8	9E	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Vert Osc.-Amp.	6SN7GT	6SN7GT	8BD	
V14	Hor Phase Det	6AL5	6AL5	6BT	
V15	Hor Mult	6SN7GT	6SN7GT	8BD	
V16	Hor Output	6AU5GT	6AU5GT	6CK	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rect	1V2	1V2	9U	
V19	HV Rect	1V2	1V2	9U	
V20	LV Rect	5U4G	5U4G	5T	
V21	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	350		AFH88R				TVL-3767	▲ Filter
B	40	350							■ Filter
C	40	350							▲ Filter
C3A	30	300		AFI6232H		UPT38130			▲ Output Decoup.
B	80	250							■ Decoupling
C	10	300							▲ V. Output Screen
C3A	20	400		AF942J30B				TVL-3780	▲ Decoupling
B	20	400						TVA-1310	■ Decoupling
C	30	600							▲ Vert. Osc. Decoup.
D	100	50							Vert. Amp. Cath.
C4	500	5		RBS6/500		BRB505A		TVA-1103	Filter
C5	.1	150		RBS150/4		BR145		TVA-1300	Stabilising Cap.
C6	25	50		RBS50/25		BR255A		TVA-1306	Output Cath. Byp.
C7	.47			S47	D6-470		GPUK-47	19C25	RF Coupling
C8	1500			SI150	D6-152		GP2L-0015	19C30	AGC Filter
C9	5000			BPD-005	DD-502		811-005	29C1	1st RF Dec.
C10	5000			BPD-005	DD-502		811-005	29C1	1st RF Dec.
C11	14						NPOK-14		Fixed Padder
C12	100			SI100	D6-101		GPUK-100	19C11	RF Coupling
C13	4.7			S14.7NPO	TCZ-4.7		NPOK-4.7		RF Coupling *
C14	680			SG680	D6-681		GP2K-680	19C17	2nd RF Cath.
C15	5000			BPD-005	DD-502		811-005	29C1	2nd RF Decoup.
C16	5000			BPD-005	DD-502		811-005	29C1	2nd RF Decoup.
C17	14						NPOK-14		Fixed Padder
C18	100			SI100	D6-101		GPUK-100	19C11	RF Coupling
C19	3.3				TCZ-3.3				Osc. Coupling
C20	33			SI33	D6-330		GPUK-33	19C24	Osc. Grid Cap.
C21	17.5						N470K-17.5		Fixed Trimmer
C22	10			SI10NT50	TCN-10		N750K-10	19C4	Fixed Trimmer
C23	10			SI20NPO			NPOK-20		Fixed Padder
C24	10			SI10NT50	TCN-10		N750K-10	19C4	Fixed Trimmer
C25	5000			BPD-005	DD-502		811-005	29C1	RF Bypass
C26	5000			BPD-005	DD-502		811-005	29C1	Filament Bypass
C27	70	500		SI75NPO	TCZ-68	5W5QT	GPUK-68	19C10	IF Coupling
C28	5000			BPD-005	DD-503	1DSD5	811-005	29C1	AGC Filter
C29	5000			BPD-005	DD-502	1DSD5	811-005	29C1	1st V. IF Dec.
C30	5000			BPD-005	DD-502	1DSD5	811-005	29C1	1st V. IF Fil.
C31	130			SI130	D6-131	5W5T15	GP2K-130	19C39	IF Coupling
C32	.1	300		P388-1	DF-104	PTK4P1		TM-1-2	AGC Filter
C33	5000			BPD-005	DD-502	1DSD5	811-005	29C1	2nd V. IF Dec.
C34	5000			BPD-005	DD-502	1DSD5	811-005	29C1	2nd V. IF Fil.
C35	120			SI120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C36	5000			BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Dec.
C37	5000			BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Cath.
C38	5000			BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Fil.
C39	120			SI120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C40	120			SI120	D6-121	5W5T15	GP2K-120	19C29	IF Coupling
C41	.01	400		P488-01	DD-103	PTK4S1	811-01	TM-11-4	DAGC Dec.
C42	.1	300		P388-1	DF-104	PTK4P1		TM-1-2	RF Bypass
C43	5			SI5	TCZ-4.7	5W5V5	GPUK-5	MS-55	V. Diode Filter
C44	5000			BPD-005	DD-502	1DSD5	811-005	29C1	V. Det.-AGC Fil.
C45	680			SI680	D6-681	5W5T7	GP2K-680	19C17	V. Amp. Cath.
C46	470			SK470	D6-471	5W5T5	GP2K-470	19C15	V. Amp. Cath.
C47	.1	600		P968-1	DF-104	PTK6P1		TM-1	Video Coupling
C48	.1	400		P488-1	DF-104	PTK4P1		TM-1-4	Pic. Tube Cath.
C49	39			SG39	D6-390	5W5Q4	GPUK-39	1FM-45	S. IF Decoupling
C50	10000			BPD-01	DD-103	PTK4S1	811-01	35C1	S. IF Decoup.
C51	330			SI330	D6-331	5W5T3	GP2K-330	19C4	Diode Load Cap. †
C52	.004	600		P988-004	D6-402	PTK6D4	GP2M-004	TM-24	De-emphasis
C53	.01	400		P488-01	D6-103	PTK4S1	811-01	TM-11-4	Audio Coupling
C54	.0047	400		P488-0047	D6-472	PTK4D5	GP2M-0047	TM-25	Audio Coupling
C55	.023	400		P488-023	DF-203	PTK4S3		TM-12-4	Audio Coupling
C56	.0047	400		P488-0047	D6-472	PTK6D5	GP2M-0047	TM-25	Output Plate Byp.
C57	130			SI130	D6-131	5W5T15	GP2K-130	19C39	Sync. Coupling

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	.0022	400		P488-0022	D6-222	PTK6D2	GP2M-0022	TM-22	Integrator Net.
C59	.0047	600		P688-0047	D6-472	PTK6D5	GP2M-0047	TM-25	Integrator Net.
C60	.0047	600		P688-0047	D6-472	PTK6D5	GP2M-0047	TM-25	Integrator Net.
C61	.0047	600		P688-0047	D6-472	PTK6D5	GP2M-0047	TM-25	Vert. Osc. Grid Cap.
C62	.1	400		P488-1		PTK4P1		TM-1-4	Vert. Discharge
C63	.22	400		P488-22		PTK4P25		TC-2-4	Vert. Sweep Coupling
C64	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	Hor. Sync. Coupling
C65	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	Hor. Sync. Coupling
C66	.047	400		P488-047		PTK4S5		TM-15-4	Hor. Feedback
C67	.01	400		P488-01	D6-103	PTK4S1	811-01	TM-11-4	Voltage Divider
C68	.0047	400		P488-0047	D6-472	PTK6D5	GP2M-0047	TM-25	AFC Filter
C69	.047	400		P488-047	DF-503	PTK4S5		TM-15-4	AFC Filter
C70	3900	500		1464-004		1DR5D4		MS-34	Fixed Trimmer
C71	330	500		1469-00033	D6-331	5W5T3	GP2K-330	MS-33	Hor. Feedback
C72	470			SI470	D6-471	5W5T5	GP2K-470	19C15	Hor. Discharge
C73	.01	600		P688-01	D6-103	PTK6S1	811-01	TM-11	Hor. Sweep Coup.
C74	.22	400		P488-22		GT4P25		TM-2-4	Hor. Output Screen
C75	.22	400		P488-22		GT4P25		TM-2-4	Hor. Output Cath.
C76	.0068	600		P688-0068					Fixed Trimmer
C77	.22	400		P488-22		GT4P25		TM-2-4	Hor. Sweep Coupling
C78	.1	400		P488-1		PTK4P1		TM-1-4	Damper Filter
C79	.033	400		P488-033		PTK6S3		TM-13	Damper Filter
C80	500	10000		HV10A	TV1-501				Voltage Doubler Cap.
C81	500	10000		HV10A	TV1-501				HV Filter
C82	500	10000		HV10A	TV1-501				HV Filter
C83	50			SI50	D6-500	5W5Q5	GP1K-50	19C28	Ant. Coupling
C84	50			SI50	D6-500	5W5Q5	GP1K-50	19C28	Ant. Coupling
C85	.01	400		P488-01	D6-103	PTK4S1	811-01	TM-11-4	Line Filter
C86	.01	400		P488-01	D6-103	PTK4S1	811-01	TM-11-4	Line Filter

* Not used in all models.
† Some models use 680MMF in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	2	52.64		RTV-109		Contrast control-Wire Wound-front
B	500KΩ	½					Volume control-rear
R2A	2200Ω	4	52.62				Focus control-Wire Wound-front
B	50KΩ	½			RTV-11		Brightness control-rear
R3A	1 Meg.	½		Concentrikit			Vert. hold control-front
B	50KΩ	½	52.66	Bil-125 *	RTV-110	SBB-510	Horiz. hold control-rear
C	Shaft Rod			K-187 *			Attach per instru. in Concentrikit
R4A	250KΩ	½	52.38	QU-130	AM-55-S	AN-50	Horiz. drive control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5 Meg.	½	52.24	QU-239	AM-54-S	AN-83	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	5000Ω	½	52.35	QU-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	15KΩ	4	52.65		58-15K		Width control-Wire Wound

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R8	560Ω	½		BTS-560	1st RF Amp. Grid
R9	1500 20%	½		BTS-150	AGC Network
R10	1200Ω	½		BTS-1200	1st RF Amp. Plate Coil Shunt
R11	1000Ω 20%	½		BTS-1000	1st RF Amp. Decoupling
R12	3300 20%	½		BTS-330	Decoupling
R13	10KΩ	½			2nd RF Amp. Grid
R14	1000 20%	½		BTS-100	2nd RF Amp. Cathode
R15	1500Ω	½		BTS-1500	2nd RF Amp. Plate Coil Shunt
R16	5600Ω	½			Conv. Grid
R17	100KΩ 20%	½			Conv. Grid
R18	10KΩ	½			Osc. Plate
R19	10KΩ	½			Osc. Plate
R20	1MΩ	½			1st Video IF Amp. Grid
R21	82Ω	½		BTS-82	1st Video IF Amp. Cathode
R22	470Ω	½		BTS-470	AGC Network-See Note 1
R23	100Ω	½		BTS-100	Decoupling
R24	100Ω	½		BTS-100	1st Video IF Amp. Decoupling
R25	8200Ω	½			2nd Video IF Amp. Grid
R26	82Ω	½		BTS-82	2nd Video IF Amp. Cathode
R27	100Ω	½		BTS-100	2nd Video IF Amp. Decoupling
R28	8200Ω	½			3rd Video IF Amp. Grid
R29	82Ω	½		BW-1-82	3rd Video IF Amp. Cathode
R30	100Ω	½		BTS-100	3rd Video IF Amp. Decoupling
R31	1 Meg.	½		BTS-1 Meg.	AGC Network
R32	8200Ω	½		BTS-8200	Video Det. Diode Load
R33	1000Ω	½		BTS-1000	Bias Network
R34	680KΩ	½		BTS-680K	AGC Diode Load
R35	39KΩ	1		BTA-39K	Voltage Divider
R36	120Ω	½			Parasitic Suppressor
R37	39KΩ	1		BTA-39K	Voltage Divider
R38	18KΩ	3		BTS-18K	Video Output Screen
R39	5600Ω	2		BTS-5600	Video Output Plate
R40	56KΩ	3		BTS-56K	Voltage Divider
R41	56KΩ	3		BTS-56K	Voltage Divider
R42	2200Ω	½		BTS-2200	Picture Tube Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	IDENTIFICATION CODES
R43	270KΩ	½		BTS-270K	DC Rest. Load
R44	220KΩ	½		BTS-220K	DC Rest. Load
R45	1.5 Meg.	½		BTS-1.5 Meg.	Voltage Divider
R46	3900Ω	½		BTS-3900	Sync. Amp. Plate
R47	3.9 Meg.	½		BTS-3.9 Meg.	Sync. Amp. Grid
R48	3900Ω	½		BTS-3900	Sync. Amp. Cathode
R49	3900Ω	½		BTS-3900	Sync. Amp. Plate
R50	10KΩ	½		BTS-10K	Voltage Divider
R51	100KΩ	½		BTS-100K	Picture Tube Cathode
R52	1000Ω	½		BTS-1000	Acc. Anode Decoupling
R53	47KΩ	½			Sound IF Amp. Grid
R54	4700Ω	½		BTA-4700	Sound IF Amp. Decoupling
R55	330Ω	½		BTS-330	Balancing-See Note 2
R56	15KΩ	½			De-emphasis
R57	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R58	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R59	10 Meg. 20%	½		BTA-10 Meg.	AF Amp. Grid
R60	220KΩ	1		BTA-220K	AF Amp. Plate
R61	470KΩ 5%	½		BTA-470K-5%	Audio Output Grid
R62	680Ω	1		BTA-680	Audio Output Cathode
R63	470Ω	1		BTA-470	Audio Output Decoupling
R64	22KΩ	½		BTS-22K	Integrator
R65	8200Ω	½		BTS-8200	Integrator
R66	8200Ω	½		BTS-8200	Integrator
R67	1 Meg.	½		BTS-1 Meg.	Vert. Osc. Grid
R68	470KΩ 5%	½		BTA-470K-5%	Vert. Osc. Plate
R69	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R70	100KΩ	½		BTS-100K	Voltage Divider
R71	47KΩ	½		BTS-47K	Filter
R72	3300Ω	½		BTS-3300	Vert. Peaking
R73	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Amp. Grid
R73	330Ω	½		BTS-330	Vert. Amp. Cathode
R75	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R76	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R77	4.7 Meg.	½		BTS-4.7 Meg.	Horiz. Phase Det. Load
R78	470KΩ 5%	½		BTA-470K-5%	Horiz. AFC Filter Network
R79	56000Ω 5%	½		BTS-5600-5%	Horiz. Mult. Plate
R80	1500Ω	½		BTS-1500	Horiz. Mult. Cathode
R81	100KΩ	½		BTS-100K	Horiz. Mult. Grid
R82	47KΩ	½		BTS-47K	Horiz. Hold Control Shunt
R83	22KΩ	½		BTA-22K	Horiz. Mult. Decoupling
R84	100KΩ	½		BTS-100K	Horiz. Mult. Plate
R85	6800Ω	½		BTS-6800	Horiz. Peaking
R86	470KΩ 5%	½		BTS-470K-5%	Horiz. Output Grid
R87	82Ω	1		BW-1-82	Horiz. Output Cathode
R88	8200Ω	2		BTS-8200	Horiz. Output Screen
R89	27KΩ	½		BTS-27K	Feedback Network
R90	10KΩ	½		BTS-10K	Feedback Network
R91	470KΩ 5%	½		BTS-470K-5%	HV Rect. Load
R92	470KΩ 5%	½		BTS-470K-5%	HV Rect. Load
R93	470KΩ 5%	½		BTS-470K-5%	HV Rect. Load
R94	470KΩ 5%	½		BTS-470K-5%	HV Rect. Load
R95	270Ω	2		BW-2-270	Focus Coil Shunt-Wire Wound
R96	1750Ω	20		2D-1750	Filter-Wire Wound
R97	22Ω	½		BW-½-22	Bias Network
R98	22Ω	½		BW-½-22	Bias Network

Note 1. Some models use a 220Ω resistor in this application.
Note 2. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	540VCT	5VAC	6.3VAC			P-3067	
	① 1.7A	.280ADC	② 3A	③ 1.2A				
	Tap ④			SEC. 4				
	110VAC			6.3VAC				
	⑤ 1.76A			⑥ 7.4A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	175Ω	150Ω		A-8111	A-3000	TBO-1	Vert. Block Osc. Trans
T3	200Ω	58Ω					Hor. Output Trans.
	Tap ②	SEC. 2					
	47Ω	2.2Ω					
		SEC. 3					
		0Ω					
		SEC. 4					
		0Ω					
T4	1200Ω			A-8123	A-3037		Vert. Output Trans.
	Tap ②						
	13Ω						
T5A	17Ω			DY-1	MD-3		Hor. Deflection Coil
B	64Ω						Vert. Deflection Coil
T6	420Ω			FC-10	MF-3		Focus Coil

FADA MODELS S1015, S1020, S1030

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	5600Ω	3.6Ω	370Ω	.5Ω		A-3877	A-2930	RO-301	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FADA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.6Ω		ST-108 MOD. P6-X	6A15	
	CONE DIA.	V. C. DIA.				
SP2	5 7/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.280ADC	38Ω	1.2 Henries		C-2326 ①	C-2996 ①	TR-3300①	① Drill one new mounting hole.

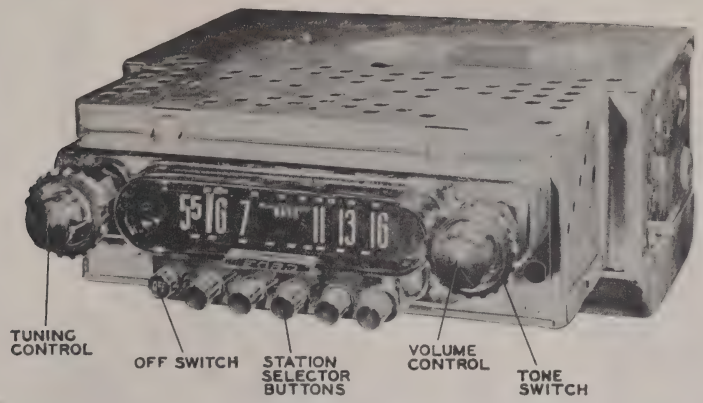
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FADA PART No.	MEISSNER PART No.	
L2	Ant. Coils	.1Ω	.1Ω			
L3	RF Coil	0Ω				High Band
L4	RF Coil	0Ω				Low Band
L5	RF Coil	0Ω				High Band
L6	RF Coil	0Ω				Low Band
L7	Osc. Coil	0Ω				High Band
L8	Osc. Coil	0Ω				Low Band
L9	Fil. Choke	0Ω				
L10	RF Choke	.1Ω				
L11	1st Video IF	.9Ω				
L12	Fil. Choke	0Ω				
L13	Fil. Choke	0Ω				
L14	2nd Video IF	.3Ω				
L15	Fil. Choke	0Ω				
L16	RF Choke	1.8Ω				
L17	3rd Video IF	.2Ω				
L18	Fil. Choke	0Ω				
L19	RF Choke	1.8Ω				
L20	4th Video IF	.3Ω				
L21	Peaking	5Ω				
L22	Peaking	13Ω				
L23	Peaking	7.8Ω				Wound on 18KΩ resistor
L24	Peaking	6.7Ω				
L25	Sound IF	2.2Ω	2.2Ω			
L26	Ratio Det. Trans.	4.4Ω	2.2Ω			
L27	Horiz. Osc.	47Ω				
L28	Horiz. Lin.	7.2Ω				Tap at 3Ω
L29	AC Line Choke	0Ω				
L30	AC Line Choke	0Ω				

MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
M1	RF Tuner		
M2	Fuse		.25A 250V
M3	Ion Trap		

FORD
MODEL GF890 (OA-18805-B)



FORD MODEL GF890

TRADE NAME	Ford, Model GF890 (Ch. OA-18805-B)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (EIGHT)	Types 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT DET-AVC-AF, 6J5GT Phase Inv., (2) 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	535-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Set the tone control to "Hi-Fidelity" position.

Construct a "dummy" antenna as shown in figure 1 to apply generator signal to receiver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	As per figure 1	High side to pin 8 (Grid) of 6SA7 (V2). Low side to chassis.	265KC (400 ∿ Mod.)	High frequency end of dial	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	High side to antenna socket. Low side to chassis.	535KC	maximum low frequency end of dial	"	A5	"
3.	"	"	1300KC	Tune for max. output	"	A6, A7,	Adjust for maximum output. Set dial pointer to 1300KC calibration mark.
	ALIGNMENT AFTER CORE OR COIL REPLACEMENT						
4.	SCREW CORES OUT OF ANTENNA, RF CONVERTER AND OSCILLATOR COILS.						
5.	As per figure 1	High side to antenna socket. Low side to chassis.	1610KC	maximum high frequency end of dial	Across voice coil	A5, A6, A7, A8	Adjust for maximum output.
6.	"	"	1300KC	1300KC	"	A9, A10, A11, A12	"
7.	"	"	600KC	600KC	"	A13	If output is weak, adjust for maximum output. Repeat steps 5 and 6 until no further improvement can be made.

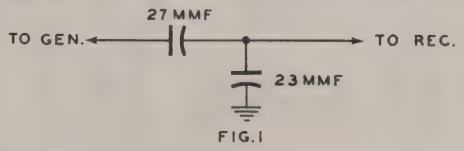


FIG. 1

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7GT	6SK7GT	8N	
V2	Converter	6SA7GT	6SA7GT	8AD	
V3	IF Amp.	6SK7GT	6SK7GT	8N	
V4	DET-AVC-AF	6SQ7GT	6SQ7GT	8Q	
V5	Phase Inv.	6J5GT	6J5GT	6Q	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X5GT	6X5GT	8S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	22-1484	AF44J4A		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	25							Output Cath.
C2	.0047	600		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	AVC Filter
C3	.1	400	22-2061	P488-1	DF-104	PTE4P1		4TM-1	Decoupling
C4	100	500	22-162	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	RF Coupling
C5	250	500	22-1136	1469-00025	TCZ-240	5R5T25	GP2K-250	MS-325	Fixed Trimmer
C6	100	500	22-162	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C7	260						N330M-260		Fixed Trimmer
C8	.02	200	22-2071	P488-02	DF-203	PTE4S2		2TM-12	AVC Filter
C9	.1	200	22-1777	P288-1	DF-104	PTE4P1		2TM-1	IF Cath. Byp.
C10	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	AVC Filter
C11	.0015	400	22-1785	P688-0015	D6-152	PTE6D1	GP2L-0015	6TM-152	Tone Comp.
C12	.0056	200	22-2046	P688-006	D6-562	PTE6D6		6TM-26	Tone Comp.
C13	5000			BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C14	220	500	22-182	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	AF Amp. Plate
C15	.022	600	22-1813	P688-022	DF-203	PTE6S2		6TM-223	Audio Coupling
C16	.022	600	22-1813	P688-022	DF-203	PTE6S2		6TM-223	Audio Coupling
C17	10000			BPD-01	DD-103	PTE6S1	811-01	36C1	Fixed Trimmer
C18	.0082	1600	22-1771	P1688-0075		PTE16D8		MB-28	Buffer
C19	.5	100	22-1728	P185-.5				68P20	Hash Filter
C20	.5	100	22-1728	P185-.5				68P20	Hash Filter

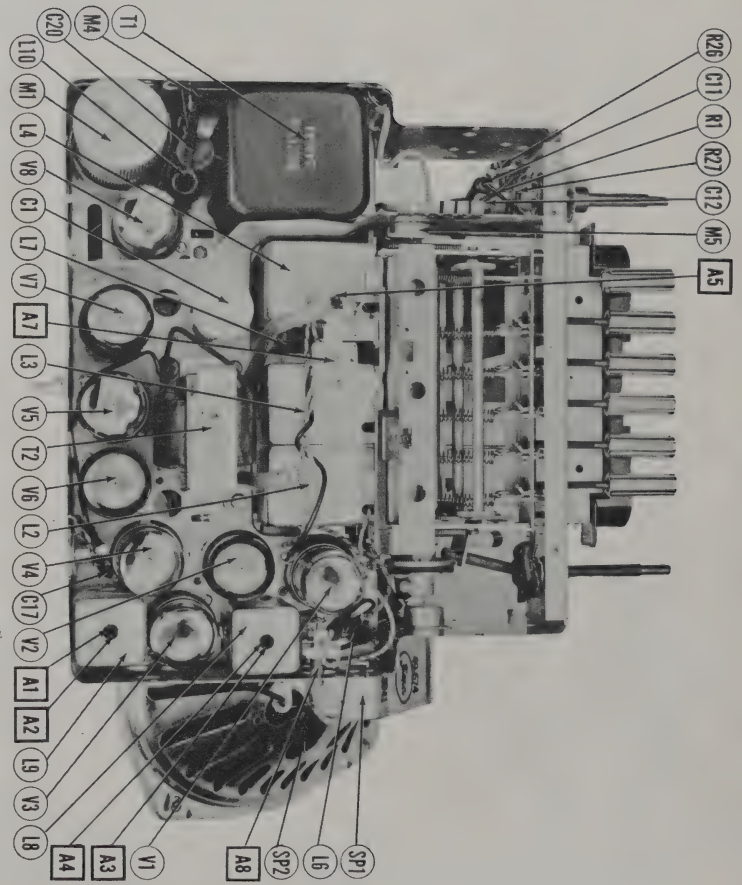
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Switch		63-2092				Tone switch-front
B	1 Meg.	½					Volume control-rear-tapped at 500KΩ
R2	2000Ω	1	63-2069-FT				Sensitivity control-Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R3	330KΩ	½	63-1890	BTS-330K	AVC Network
R4	10KΩ	2	63-1071	BTB-10K	RF Amp. Plate
R5	330KΩ	½	63-1890	BTS-330K	AVC Network
R6	5.6 Meg.	½		BTS-5.6 Meg.	AVC Network
R7	22KΩ	½	63-1841	BTS-22K	Osc. Grid
R8	820Ω	½	63-1782	BTS-820	Osc. Coil Shunt
R9	22KΩ	½	63-1841	BTS-22K	Voltage Divider
R10	1 Meg.	½	63-1912	BTS-1 Meg.	AVC Network
R11	12KΩ	2	63-1091	BTB-12K	Screen Dropping-See Note
R12	220KΩ	½	63-1884	BTS-220K	AVC Network
R13	330KΩ	½	63-1890	BTS-330K	AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
R14	220KΩ	½	63-1884	BTS-220K	Det. Diode Load
R15	33KΩ	½	63-1849	BTS-33K	Det. Diode Load
R16	15 Meg.	½		BTS-15 Meg.	AF Amp. Grid
R17	47Ω	½	63-1729	BW-½-47	AF Amp. Cathode
R18	1500Ω	½	63-1792	BTS-1500	Feedback
R19	330KΩ	½	63-1890	BTS-330K	AF Amp. Plate
R20	47KΩ	½	63-1855	BTS-47K	Phase Inv. Grid
R21	2200Ω	½	63-1799	BTS-2200	Phase Inv. Cathode
R22	39KΩ	½	63-1852	BTS-39K	Phase Inv. Plate
R23	330KΩ	½	63-1890	BTS-330K	Output Grid
R24	330KΩ	½	63-1890	BTS-330K	Output Grid
R25	330Ω	2	63-1622	BTB-330	Output Cathode
R26	100KΩ	½	63-1869	BTS-100K	Tone Compensation
R27	100KΩ	½	63-1869	BTS-100K	Tone Compensation
R28	1800Ω	2	63-1620	BTB-1800	Filter
R29	82Ω	½	63-1740	BTS-82	Hash Suppression
R30	82Ω	½	63-1740	BTS-82	Hash Suppression
R31	5.1Ω	2	22-1375	BW-2-4.7	Series Dial Lamps-Wire Wound

Note 1. Some models use a 15KΩ, 2 watt resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC @ 3.2A	480VCT .064ADC			95-1144		P-4071 ①	

① Drill new mtg. holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	9500Ω CT	4.8Ω	435Ω CT	.4Ω	95-1079	A-3823	A-2901	RO-110	

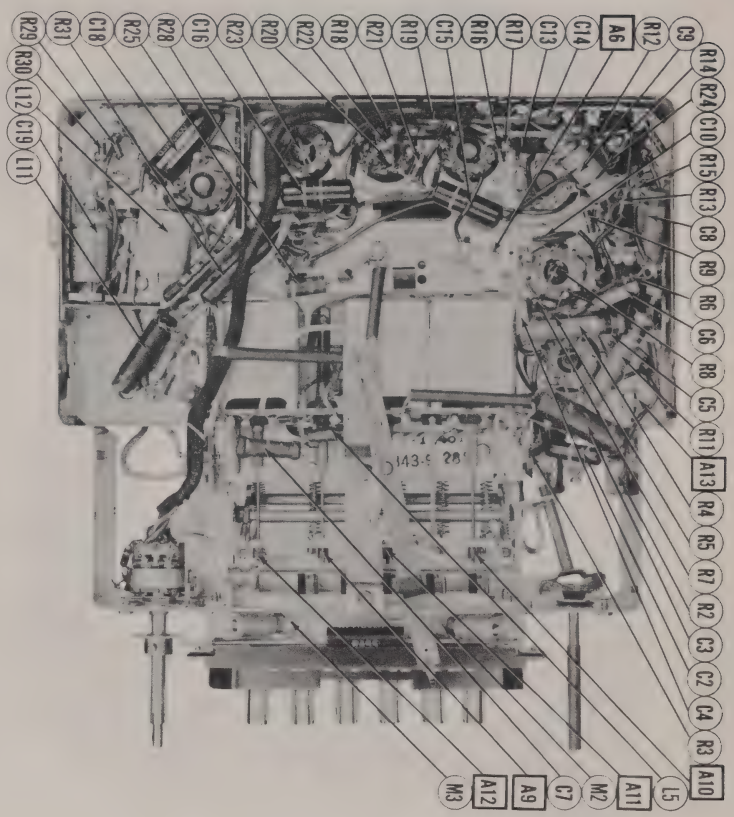
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-812		
SP1	PM	4.8Ω	49-679	MOD. P69-S	69A2	
	CONE DIA.	V. C. DIA.				
SP2	9 x 6 1/4	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
L1	Ant. Loading	.8Ω				
L2	Ant. Coil	13Ω				
L3	Ant. Coupling	13Ω				
L4	RF Coil	13Ω				
L5	RF Choke	.7Ω				
L6	Osc. Coil	2.7Ω				Tap at 1.3Ω
L7	Osc. Padder	2.7Ω				
L8	1st IF	35Ω	35Ω		16-6752	
L9	2nd IF	52Ω	52Ω		16-6754	
L10	Hash Choke	0Ω				
L11	Hash Choke	0Ω				
L12	Hash Choke	0Ω				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6VDC	115 ∿	190-22	A-100	C-00	5300	

DIAL LIGHTS

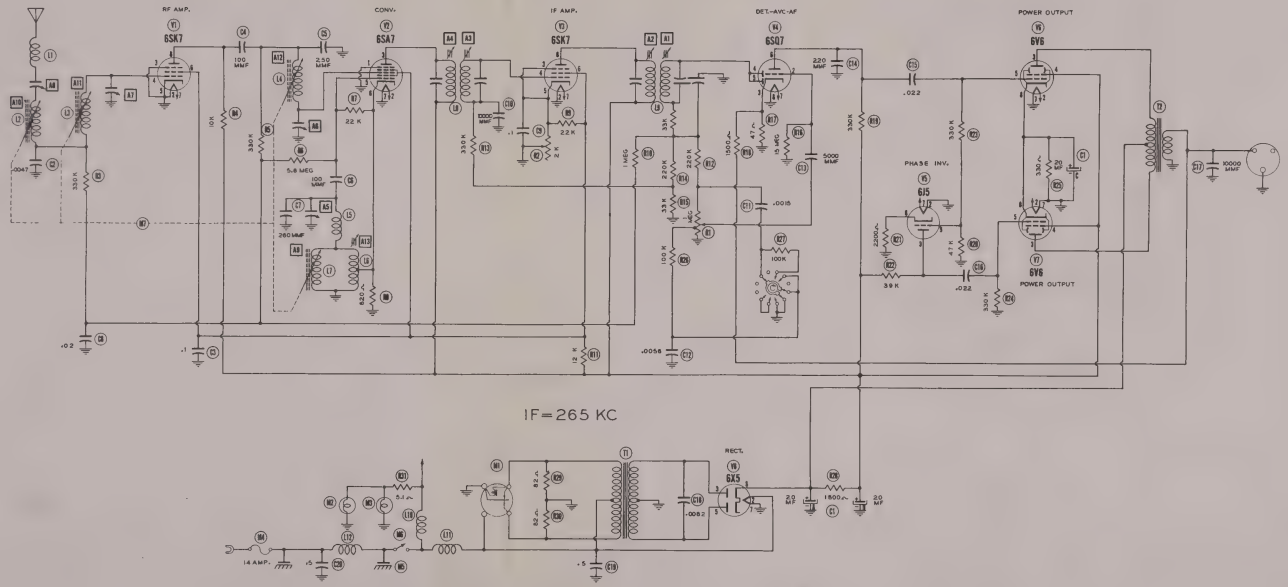
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M2	Bayonet	6-8	.25	Blue			Type #44
M3	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Fuse		14 Amp. Type SFE
M5	Spark Plate		
M6	Switch		On-Off
M7	Tuner		RF

PUSH BUTTON ADJUSTMENTS

To set push buttons loosen the button by turning the button one turn counter-clockwise. Tune in the desired station manually and push button in firmly, then release button carefully. Tighten button securely by turning clockwise. Repeat this procedure for each push button for the desired station.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0V	6.3VDC	0V	-.5VDC	0V	65VDC	0V	135VDC
V 2	6SA7GT	0V	6.3VDC	-.06VDC	.65VDC	6.3 VDC	0V	0V	-.3VDC
V 3	6SK7GT	0V	6.3VDC	-.3VDC 8.7VDC	0V	1VDC 8.7VDC	65VDC	0V	180VDC
V 4	6SQ7GT	0V	-.7VDC	0V	-.5VDC	-.6VDC	86VDC	6.3VDC	0V
V 5	6J5GT	0V	0V	115VDC	0V	0V	0V	6.3VDC	6.3VDC
V 6	6V6GT	0V	6.3VDC	330VDC	180VDC	0V	0V	0V	11VDC
V 7	6V6GT	0V	6.3VDC	330VDC	180VDC	0V	0V	0V	11VDC
V 8	6X5GT	0V	6.3VDC	315VAC	0V	315VAC	0V	0V	325VDC

† TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0Ω	47Ω	0Ω	1.5 Meg	0Ω	114KΩ	0Ω	112KΩ
V 2	6SA7GT	0Ω	44Ω	11 MEG 10000Ω	114KΩ	22KΩ 1000Ω	1.2Ω	0Ω	1.5 Meg.
V 3	6SK7GT	0Ω	41Ω	10000Ω 1000Ω	22KΩ	10000Ω 1000Ω	114KΩ	0Ω	11.8KΩ
V 4	6SQ7GT	0Ω	1.5 Meg	47Ω	270KΩ	270KΩ	1320KΩ	41Ω	0Ω
V 5	6J5GT	0Ω	0Ω	240KΩ	41Ω	47KΩ	47Ω	41Ω	2.2KΩ
V 6	6V6GT	0Ω	44Ω	11KΩ	11.8KΩ	390Ω	Inf.	0Ω	330Ω
V 7	6V6GT	0Ω	44Ω	11KΩ	11.8KΩ	390KΩ	Inf.	0Ω	330Ω
V 8	6X5GT	Inf.	44Ω	340Ω	Inf.	340Ω	Inf.	0Ω	33KΩ

† MEASURED FROM PIN 8 OF V8.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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GENERAL ELECTRIC MODEL 600
(BATTERY OPERATED)

GENERAL ELECTRIC MODEL 600
(BATTERY OPERATED)

GENERAL ELECTRIC MODEL 600

TRADE NAME	General Electric, Model 600
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES(FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1S5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	7.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	56MA at 7.5 Volts DC and 15MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	Tune for max. output	"	A6	Adjust for maximum output. Replace set in cabinet and set dial pointer to 1500KC calibration mark.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		G. E. PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	DET-AVC-AF	1S5	1S5	6AU	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	8	150	RCE-098	PRS150/8		BR815		TVA-1405	RF Bypass
C2	.03	200	UCC-042	P488-03	DF-503	PTE6S3		6TM-13	AVC Filter
C3	56	500		1468-00005	D6-560	5W5Q5	GP1K-56	1FM-45	Osc. Grid Cap.
C4	.03	200	UCC-042	P488-03	DF-503	PTE6S3		6TM-13	Decoupling
C5	.1	200	UCC-048	P288-1	DF-104	PTE4P1		2TM-1	Filament Bypass
C6A	330		RCW-3015	SI330	D6-331	5W5T3	GP2K-330	19C14	Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	811-002	29C2	Audio Coupling
C	5000			BPD-005	DD-502	PTE6D5	811-005	29C1	AF Amp. Screen
D	220			SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Plate
E	4000			BPD-005	DD-502	PTE6D4	811-005	29C1	Audio Coupling
C7	.002	200	UCC-002	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Output Plate Bypass

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	RRC-107		AG-60-Z	BSK-60-S *	Volume control
B	Shaft		Not Req.		KSS-3 *	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.		SWB-2	Not Req.	Attach to R1A per instructions

* Wrap scotch tape around shaft for drive cord surface.

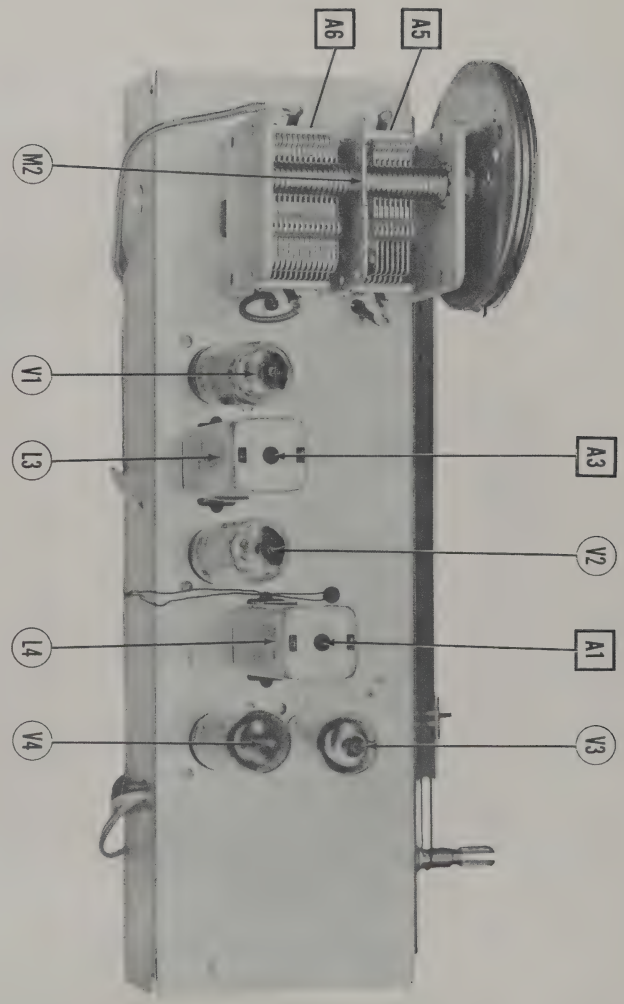
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	G. E. PART No.	IRC PART No.	
R2	100KΩ	½	URD-097	BTS-100K	Osc. Grid
R3	8200Ω	½	URD-071	BTS-8200	Screen Dropping
R4	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	AVC Net.
R5	10 Meg.	½	URD-145	BTS-10 Meg.	AF Grid
R6	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	AF Screen
R7	470KΩ	½	URD-113	BTS-470K	AF Plate
R8	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Output Grid
R9	20 Meg.	½	RRD-1015	BTS-20 Meg.	Feedback
R10	1500Ω	½	URD-053	BTS-1500	Filament String
R11	820Ω	½	URD-047	BTS-820	Filament String

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		G. E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	11000Ω	4Ω	680Ω	.4Ω	RTO-070	A-3329	A-2932 ①	RO-16 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA G. E. PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113		
SP1	PM	4Ω	UOP-457	MOD. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4.3 7/8"	9/16"				

R F COILS

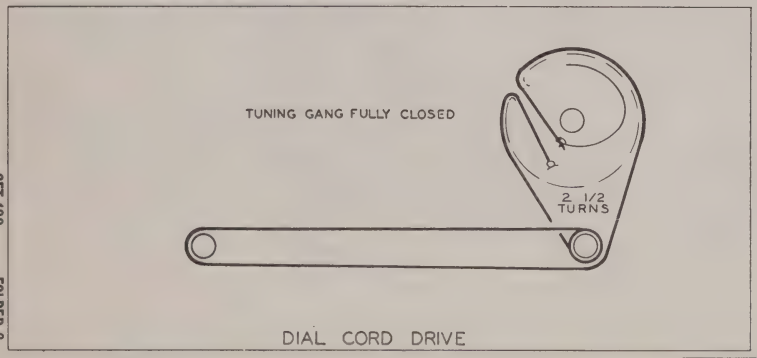
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	1.6Ω		RLL-035		
L2	Osc. Coil	2.8Ω	8.4Ω	RLC-101	14-1074 •	• Add 50MMF from high side of tuning cap to grid.
L3	1st IF	14Ω	17Ω	RTL-079	16-6668	
L4	2nd IF	25Ω	25Ω	RTL-051	16-6669	

BATTERIES

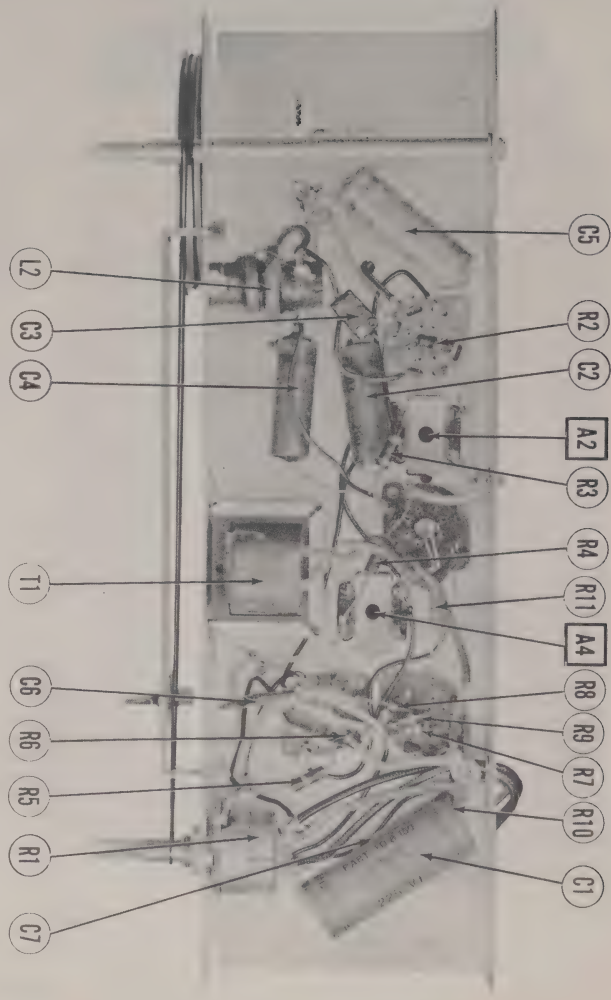
ITEM No.	VOLTAGE	G. E. PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	7.5V "A" 90V "B"				756			T6Z60	

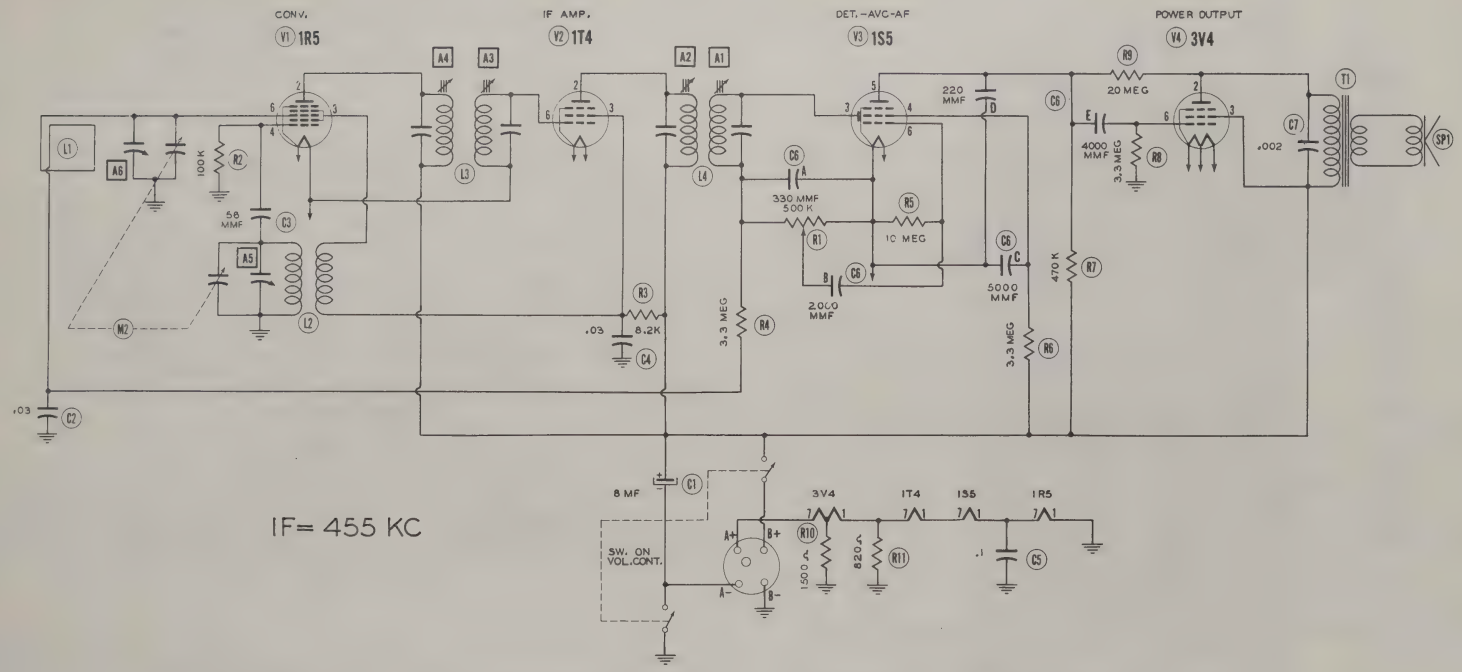
MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M2	2 Gang Var. Cap.	RCT-036	(26-498MMF, 19-190MMF)
	Cabinet	RAU-308	
	Knob	RDK-136	
	Dial Pointer	RDP-050	



CHASSIS—BOTTOM VIEW





IF= 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V.	90VDC	55VDC	§-26VDC	0V.	.1VDC	1.4VDC
V 2	1T4	2.8VDC	90VDC	55VDC	.1VDC	2.8VDC	1.4VDC	4VDC
V 3	1S5	1.4VDC	0V.	.5VDC	7VDC	32VDC	.1VDC	2.8VDC
V 4	3V4	4VDC	85VDC	90VDC	0V.	6VDC	0V.	7.5VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†14Ω	†8.2KΩ	100KΩ	*	3.8 Meg.	*
V 2	1T4	*	†25Ω	†8.2KΩ	3.8 Meg.	*	*	*
V 3	1S5	*	0Ω	500KΩ	†3.3 Meg.	†470KΩ	10 Meg.	*
V 4	3V4	*	†350Ω	†0Ω	Inf.	*	3.3 Meg.	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM PIN 3 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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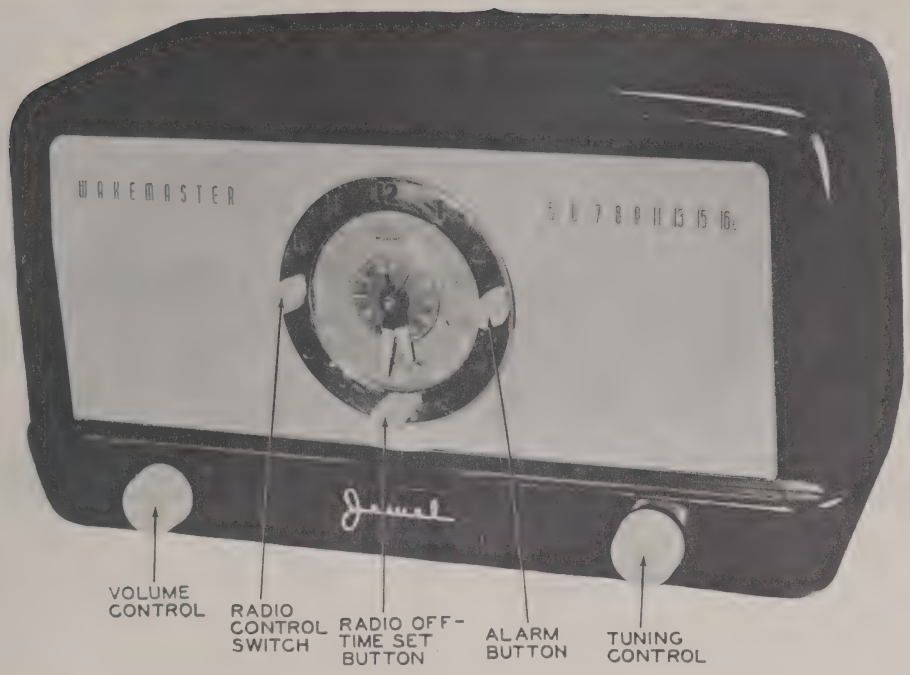
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.



JEWEL
MODEL 5057U

JEWEL
MODEL 5057U

JEWEL MODEL 5057U

TRADE NAME	Jewel, Model 5057U
MANUFACTURER	Jewel Radio Co., 10-40 5th Ave., Long Island City 1, New York
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 or 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to large "5" of "54" calibration on dial scale.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	.1MFD	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

JEWEL
MODEL 5057U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		JEWEL PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3A	DET-AVC-AF	12AV6	12AV6	7BT	
B	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7AC	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/40-		EDL44215		TVA-3451	Filter-Red
B	40	150		40-40					Filter-Green
C	20	150							Filter-Blue
C2	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.2	400		P488-22		GT4P2		72P53	Line Isolation
C4	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Diode RF Filter
C5	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C6	500	500		1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	AF Amp. Plate
C7	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C8	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Output Plate
C9	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Line Filter

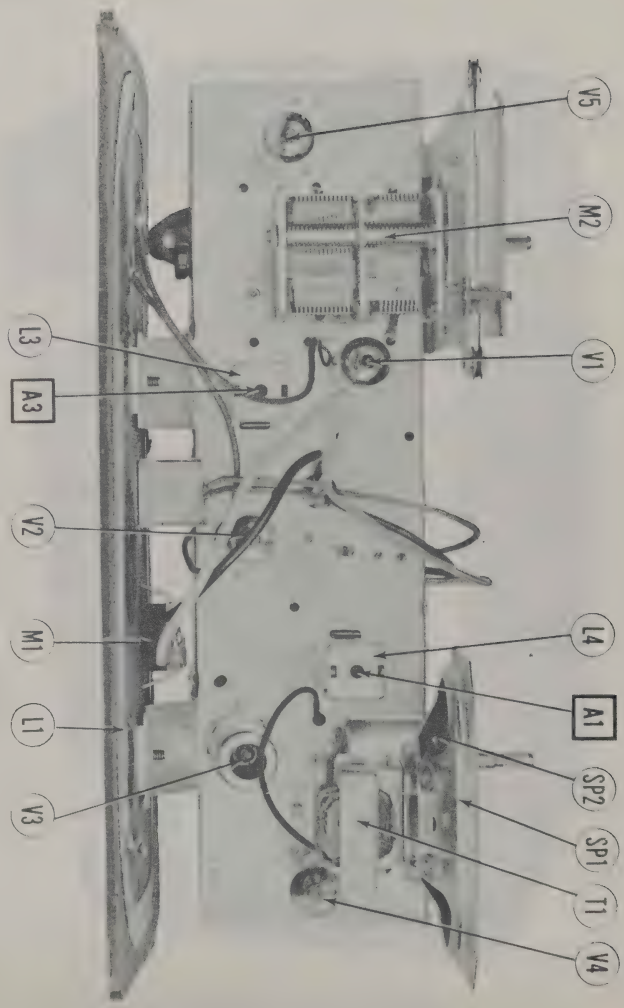
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	50-27	Q13-133	AG-60-Z	BSK-60	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	Osc. Grid
R3	150Ω	½		BTS-150	IF Amp. Cathode
R4	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R5	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R6	470KΩ	½		BTS-470K	AF Amp. Plate
R7	470KΩ	½		BTS-470K	Output Grid
R8	150Ω	½		BTS-150	Output Cathode
R9	1500Ω	1		BTA-1500	Filter
R10	100Ω	1		BTA-100	Filter-Wire Wound
R11	22Ω	½		BW-½-22	Rect. Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	4500Ω	3.8Ω	175Ω	.4Ω					

SPEAKER

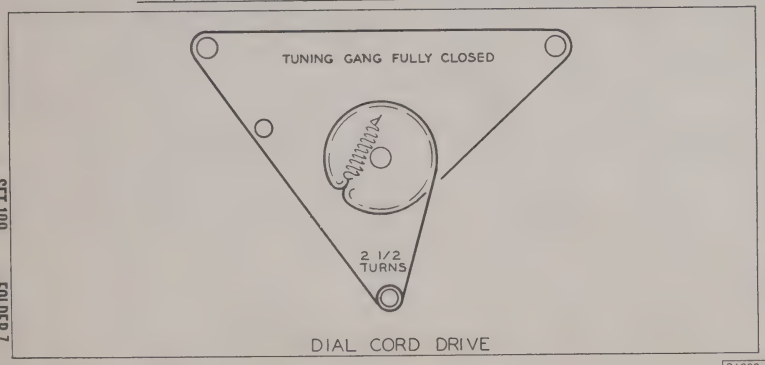
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113 ②		① Use universal mounting bracket provided.
SP1	PM	3.8Ω		MOD. P4-X	4A07 ①	② Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	JEWEL PART No.	MEISSNER PART No.
L1	Loop Ant.	3.4Ω			
L2	Osc. Coil	.5Ω	6.5Ω		
L3	1st IF	18Ω	18Ω		16-6678
L4	2nd IF	18Ω	18Ω		16-6678

MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M1	Switch		Radio On-Off Switch
M2	2 Gang Var. Cap.		(19-461MMF, 33-212MMF)

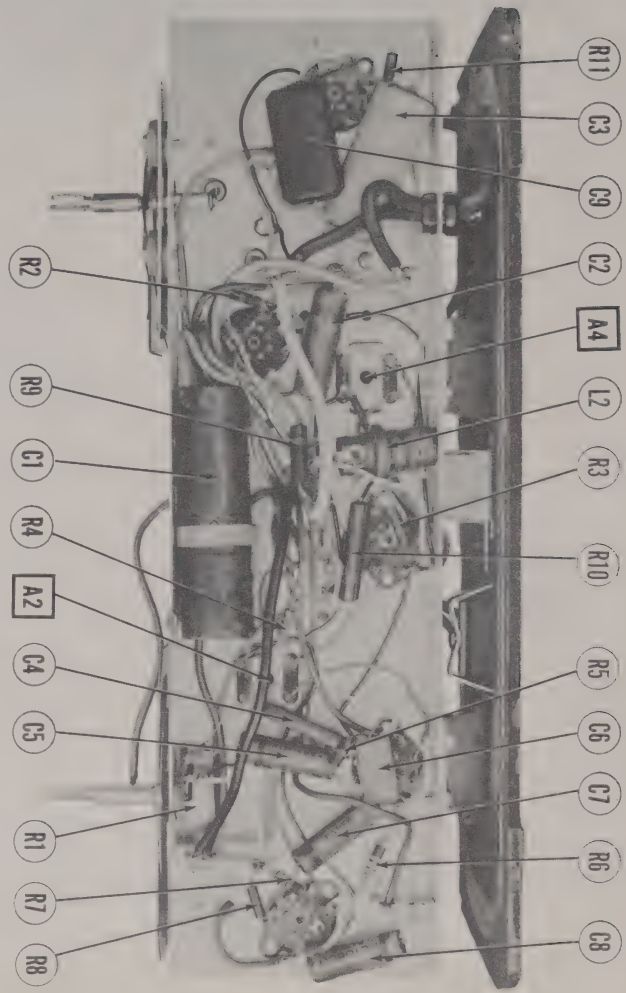


DIAL CORD DRIVE

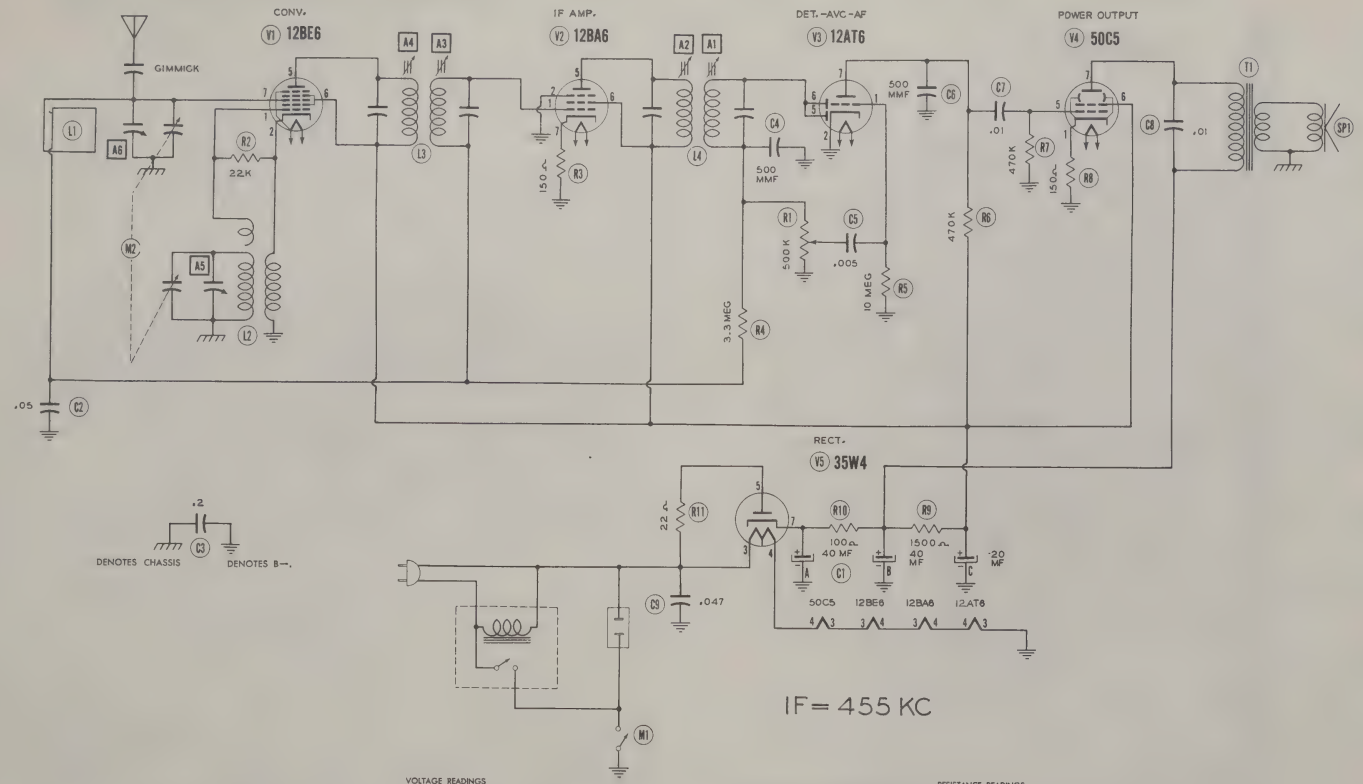
SET 109 FOLDER 7

JEWEL MODEL 5057U

CHASSIS—BOTTOM VIEW



JEWEL MODEL 5057U



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	‡-4.9VDC	0V	36VAC	24VAC	95VDC	95VDC	-.1VDC
V 2	12BA6	-.1VDC	0V	24VAC	12VAC	95VDC	95VDC	1.4VDC
V 3	12AV6	-.6VDC	0V	0V	12VAC	-.5VDC	-.5VDC	50VDC
V 4	50C5	5.8VDC	0V	36VAC	85VAC	0V	95VDC	120VDC
V 5	35W4	117VAC	0V	117VAC	85VAC	112VAC	95VAC	125VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	36Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8 Meg.
V 2	12BA6	3.8 Meg.	0Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	150Ω
V 3	12AV6	10 Meg.	0Ω	0Ω	12Ω	500KΩ	500KΩ	†470KΩ
V 4	50C5	150Ω	470Ω	36Ω	85Ω	470Ω	†1.5KΩ	†275Ω
V 5	35W4	122Ω	Inf.	122Ω	85Ω	144Ω	100Ω	500KΩ

† MEASURED FROM PIN 7 OF V5

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

OLYMPIC MODELS

XL-210, XL-211, XL-612, XL-613

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MODEL XL-210

OLYMPIC MODELS

XL-210, XL-211, XL-612, XL-613

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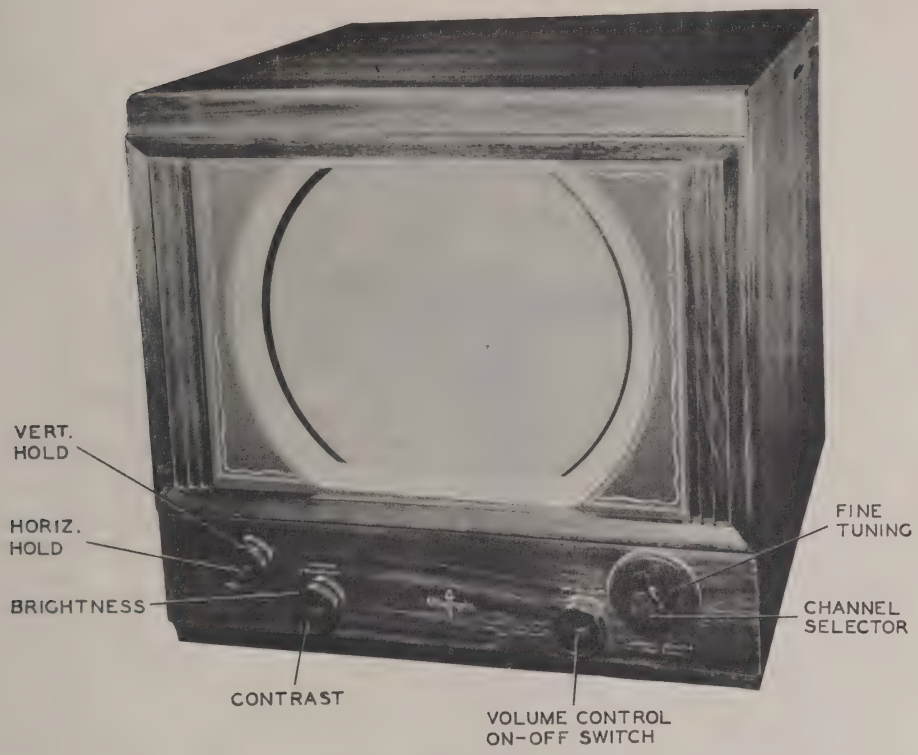
Date 10/50 Set No. 109—Folder No. 8

OLYMPIC MODELS
XL-210, XL-211, XL-612, XL-613



OLYMPIC MODELS
XL-210, XL-211, XL-612, XL-613

OLYMPIC MODEL XL-210

TRADE NAME	Olympic, Models XL-210, XL-211, XL-612, XL-613
MANUFACTURER	Olympic Radio and Tel., Inc., 34-01 35th Ave., Long Island City (1), N. Y.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110 - 120 Volts AC - 60 Cycle
RATING	1.9 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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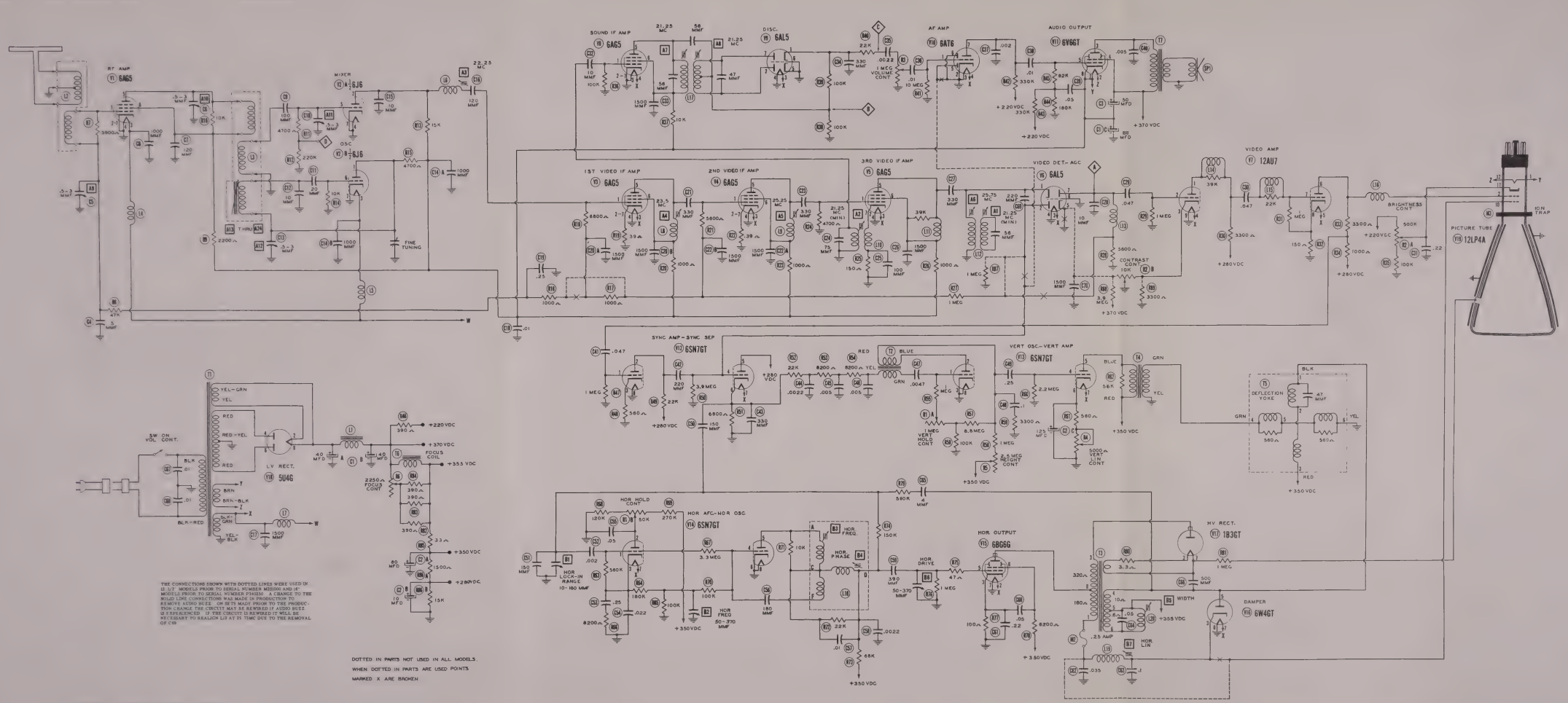
RF AMP
MIXER
OSC
FINE TUNING
SOUND IF AMP
DISC.
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET.- AGC
VIDEO AMP
PICTURE TUBE
SYNC AMP - SYNC SEP
VERT OSC - VERT AMP
HOR AFC - HOR OSC
HOR OUTPUT
HV RECT.
DAMPER
LV RECT.
SW ON VOL. CONT.
FOCUS COIL
DEFLECTION YOKE
ION TRAP
BRIGHTNESS CONT.
CONTRAST CONT.
HOR HOLD CONT
HOR LOCK-IN RANGE
HOR FREQ.
HOR PHASE
HOR DRIVE
VERT HOLD CONT
VERT LIN CONT
HOR LIN
WIDTH
HEIGHT CONT
+220 VDC
+370 VDC
+355 VDC
+350 VDC
+280 VDC
THE CONNECTIONS SHOWN WITH DOTTED LINES WERE USED IN 12, 13" MODELS PRIOR TO SERIAL NUMBER M22000 AND 16" MODELS PRIOR TO SERIAL NUMBER P340150. A CHANGE TO THE SOLID LINE CONNECTIONS WAS MADE IN PRODUCTION TO REMOVE AUDIO BUZZ. ON SETS MADE PRIOR TO THE PRODUCTION CHANGE THE CIRCUIT MAY BE REWIRED IF AUDIO BUZZ IS EXPERIENCED. IF THE CIRCUIT IS REWIRED IT WILL BE NECESSARY TO READJUST L17 AT ITS TIME DUE TO THE REMOVAL OF C49.
DOTTED IN PARTS NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

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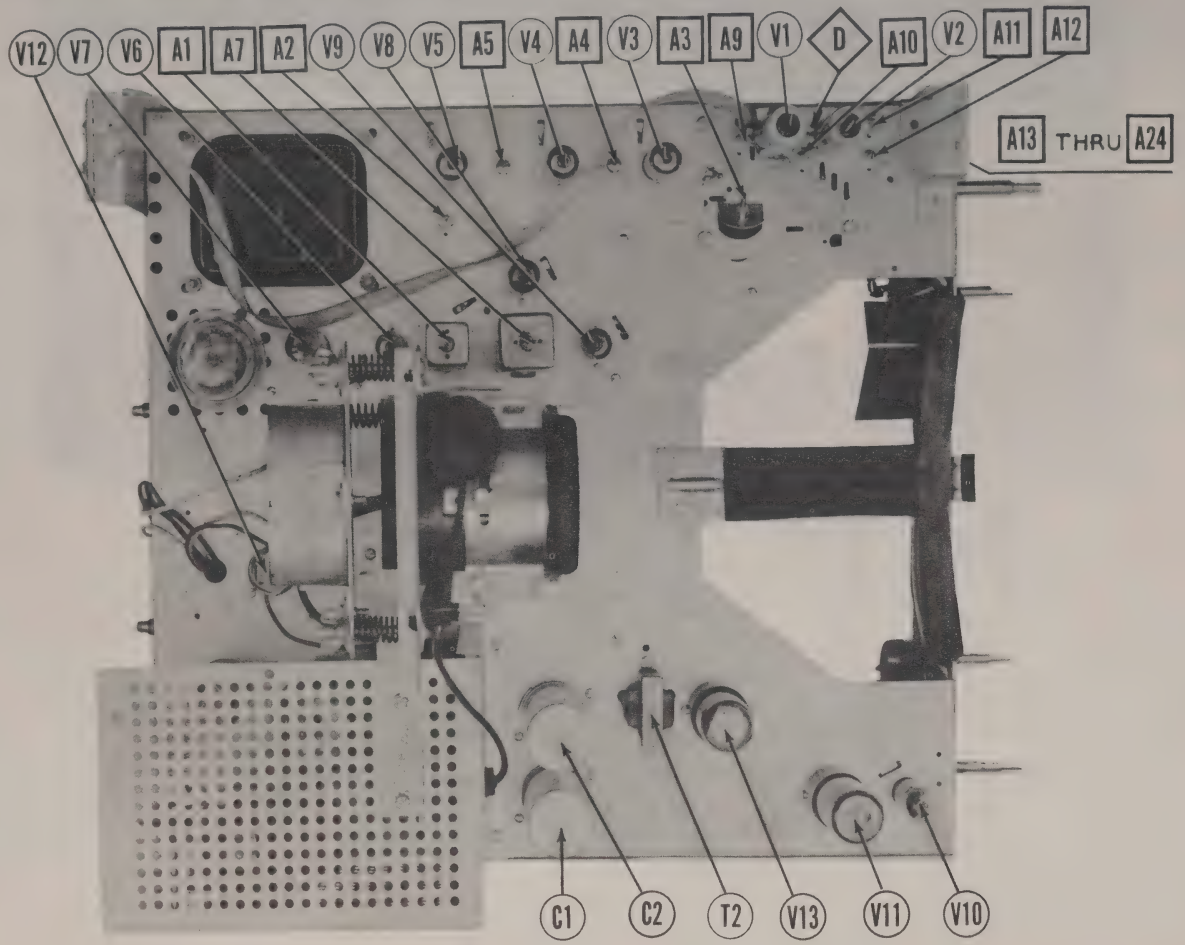
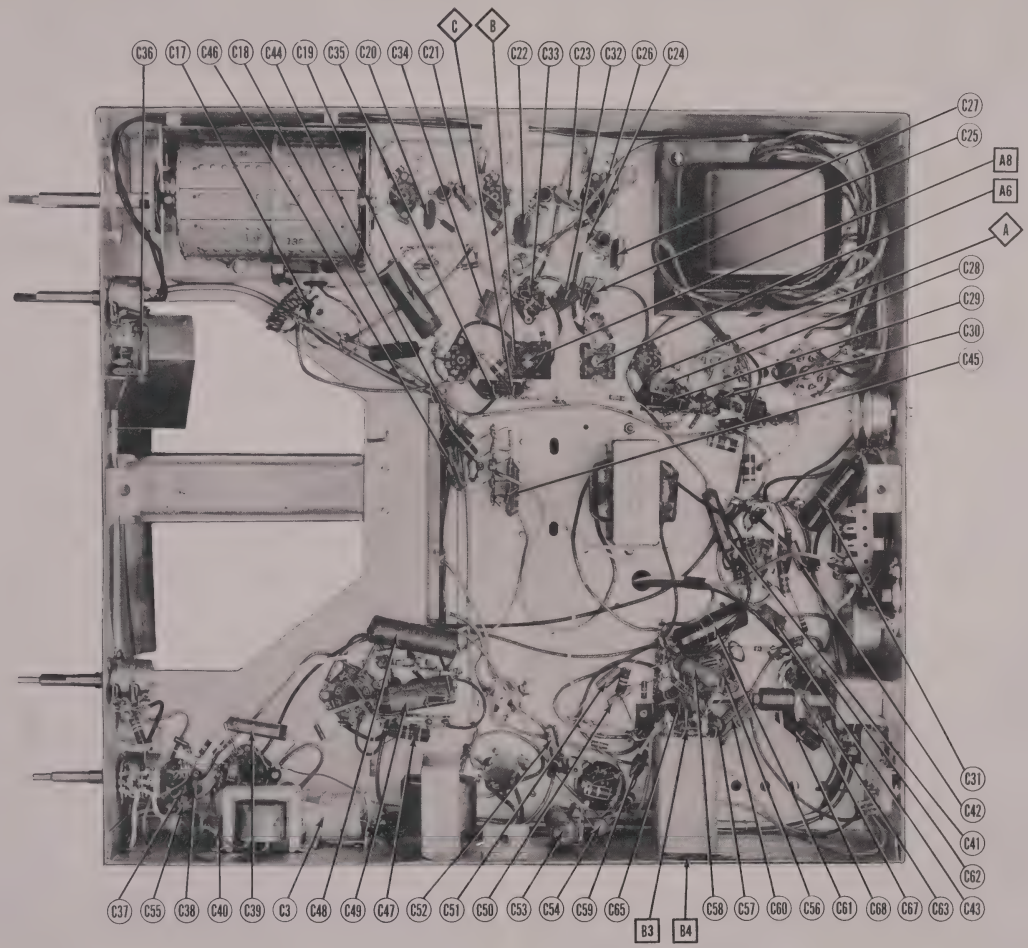
OLYMPIC MODELS
XL-210, XL-211, XL-612, XL-613

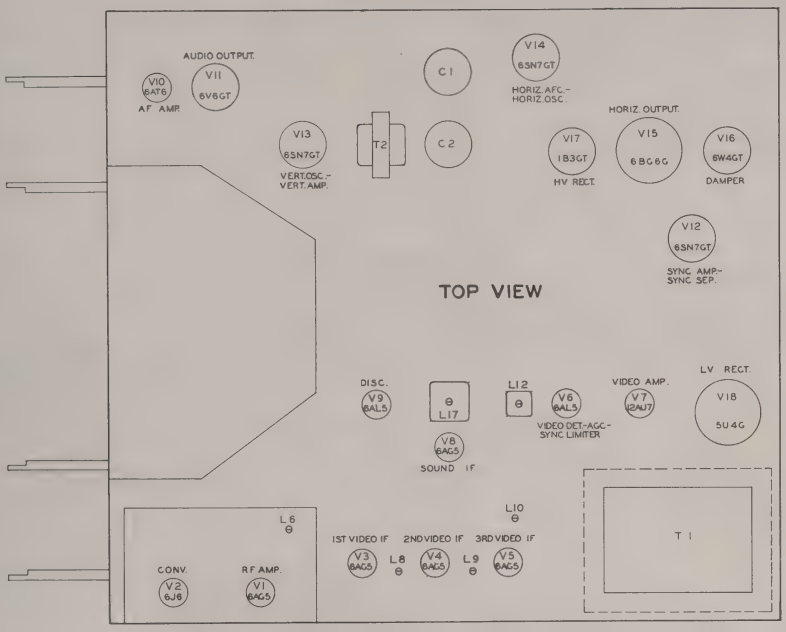
OLYMPIC MODELS
XL-210, XL-211, XL-612, XL-613

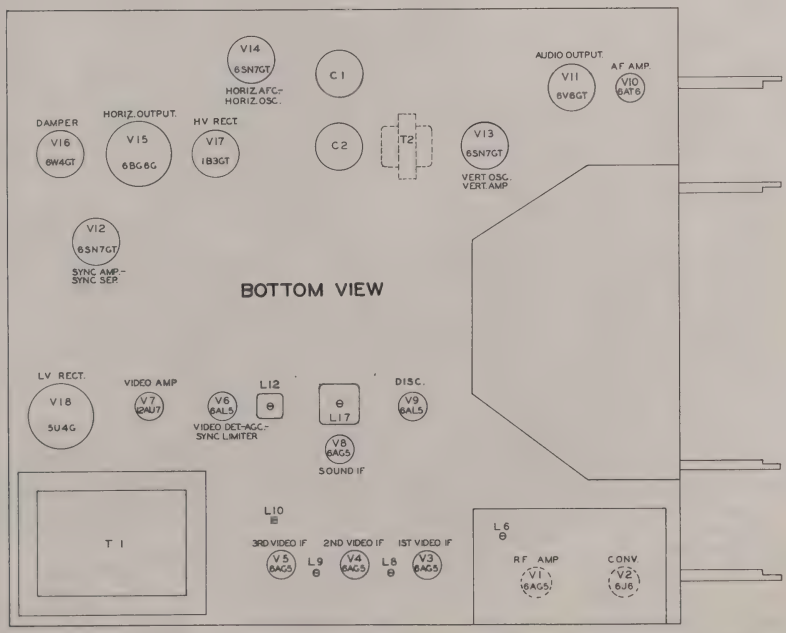


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW–CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the shock hazard remove the horizontal output tube (V15) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	Direct	"	22.25MC	"	"	A3	Adjust for maximum deflection.
3.	Direct	"	23.5MC	"	"	A4	"
4.	Direct	"	25.25MC	"	"	A5	"
5.	Direct	"	25.75MC	"	"	A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative terminal of a 1 1/2 volt battery to pin 2 of 6AL5 (V6) and the positive terminal to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	22.75MC 25.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 25.75MC marker should be 50-60% of response. If necessary, retouch A3 thru A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (B) Common to chassis.	A7	Adjust for maximum deflection.
8.	Direct	"	"	"	DC Probe to Point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 9.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A7, A8	Adjust A8 to place 21.25MC at center of diagonal line as per figure 2. Adjust A7 for maximum amplitude and straightness of diagonal line.

RF AND CONVERTER ALIGNMENT

Connect jumper wire from pin 2 of 6AL5 (V6) to chassis.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. to Point (D). Low side to chassis.	A9, A10, A11	Adjust for flat topped response curve similar to figure 3 with markers appearing not less than 70% of maximum amplitude of the curve.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check response on all channels. A9, A10, and A-11 may be adjusted slightly to obtain optimum response on all channels. Remove jumper from pin 2 of V6 to chassis.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

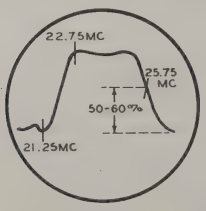


FIG.1

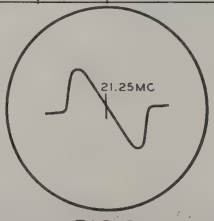


FIG.2

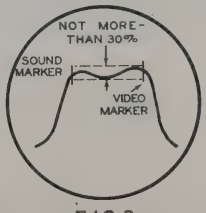


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

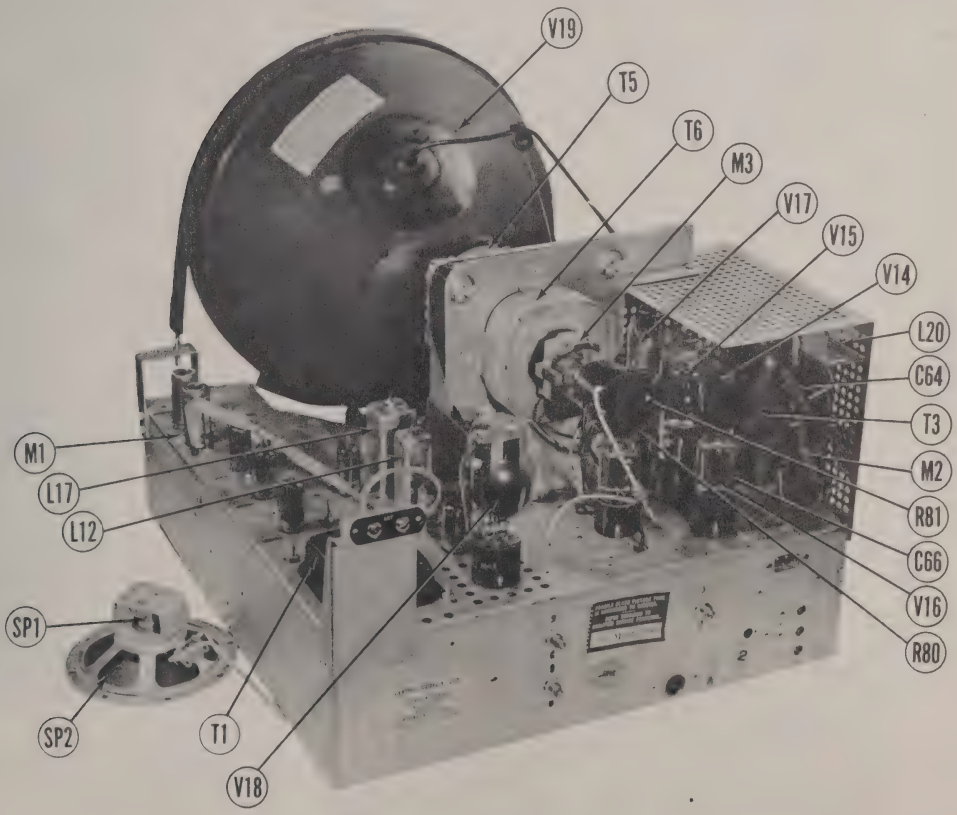
Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete alignment of the oscillator circuit may not be necessary. This is determined by checking to see that a zero reading is obtained for each channel when the fine tuning control is tuned through the midpoint of its range. (Connect signal generator and VTVM as in steps 12 and 13. Sound carrier frequencies are listed in step 13.) If the majority of the channels seem to need oscillator alignment, this sometimes may be done in one operation step 12 by adjusting A12. It should be noted that is an all channel adjustment and should not be adjusted for individual channels.

If step 12 fails to align the oscillator circuits sufficiently, it will be necessary to adjust the oscillator coils slugs. These are accessible one channel at a time, located to the right of the channel selector switch shaft.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Direct	High side to one antenna terminal. Low side to chassis.	209.75MC (Unmod.)	12	DC Probe to Point ⓒ. Common to chassis.	A12	Adjust for zero reading between positive and negative peaks with fine tuning control at its mid-point. Rotate channel selector switch and adjust individual channels outlined in step 13. Then repeat step 12.
13.	Direct	"	215.75MC	13	"	A13	"
			209.75MC	12		A14	
			203.75MC	11		A15	
			197.75MC	10		A16	
			191.75MC	9		A17	
			185.75MC	8		A18	
			179.75MC	7		A19	
			87.75MC	6		A20	
			81.75MC	5		A21	
			71.75MC	4		A22	
			65.75MC	3		A23	
			59.75MC	2		A24	



CHASSIS–TOP VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	0V.	6.3VAC	0V.	120VDC	120VDC	0V.		
V 2	6J6	105VDC	75VDC	6.3VAC	0V.	-1.2VDC	§-7.4VDC	0V.		
V 3	6AG5	-.2VDC	.4VDC	6.3VAC	0V.	135VDC	135VDC	.4VDC		
V 4	6AH5	-.2VDC	.4VDC	6.3VAC	0V.	135VDC	135VDC	.4VDC		
V 5	6AG5	0V.	1.2VDC	6.3VAC	0V.	135VDC	135VDC	1.2VDC		
V 6	6AL5	0V.	-.6VDC	6.3VAC	0V.	0V.	0V.	-.3VDC		
V 7	12AU7	290VDC	0V.	14VDC	6.3VAC	6.3VAC	195VDC	.6VDC	14VDC	0V.
V 8	6AG5	-.3VDC	0V.	0V.	6.3VAC	80VDC	80VDC	0V.		
V 9	6AL5	.1VDC	-.4VDC	6.3VAC	0V.	0V.	0V.	-.4VDC		
V 10	6AT6	-.5VDC	0V.	0V.	6.3VAC	0V.	0V.	80VDC		
V 11	6V6GT	0V.	#6.3VAC	#205VDC	#220VDC	#-7.9VDC	#-8.3VDC	#0V.	#0V.	
V 12	6SN7GT	0V.	130VDC	3.2VDC	-.7VDC	280VDC	2.3VDC	6.3VAC	0V.	
V 13	6SN7GT	-15VDC	175VDC 75VDC	0V.	-.1VDC	360VDC	13VDC 5.6VDC	6.3VAC	0V.	
V 14	6SN7GT	-3.6VDC	85VDC	-17 VDC	-75VDC	210VDC	0V.	6.3VAC	0V.	
V 15	6BG6G	0V.	6.3VAC	10VDC	0V.	0V.	0V.	0V.	245VDC	TOP CAP *
V 16	6W4GT	0V.	0V.	440VDC	0V.	360VDC	0V.	6.3VAC	0V.	
V 17	1B3GT	* DO NOT MEASURE.								
V 18	5U4G	0V.	380VDC	0V.	370VAC	0V.	370VAC	0V.	380VDC	
V 19	12LP4	#0V.	195VDC	PIN 10 440VDC	PIN 11 350VDC	PIN 12 #6.3VAC				

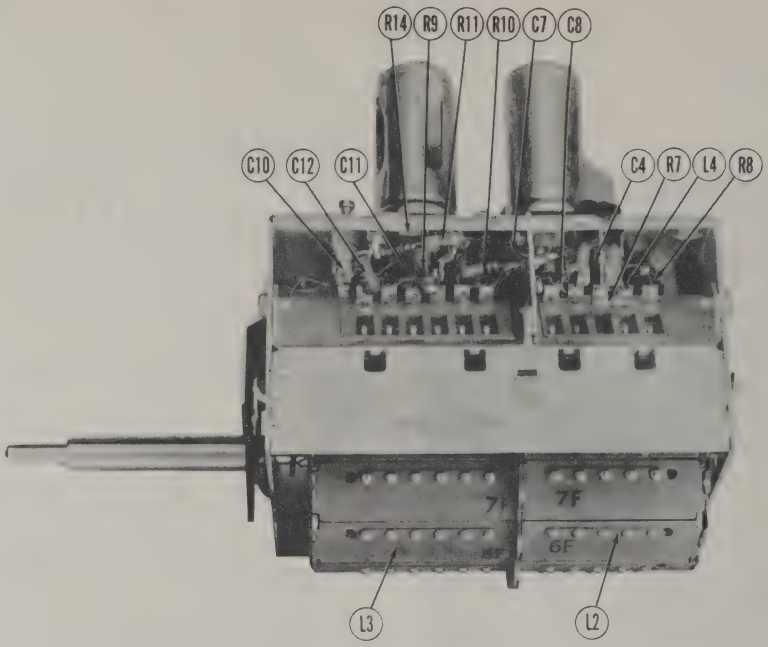
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM JUNCTION OF C1, C3, and C39.
* DO NOT MEASURE.

RESISTANCE READINGS

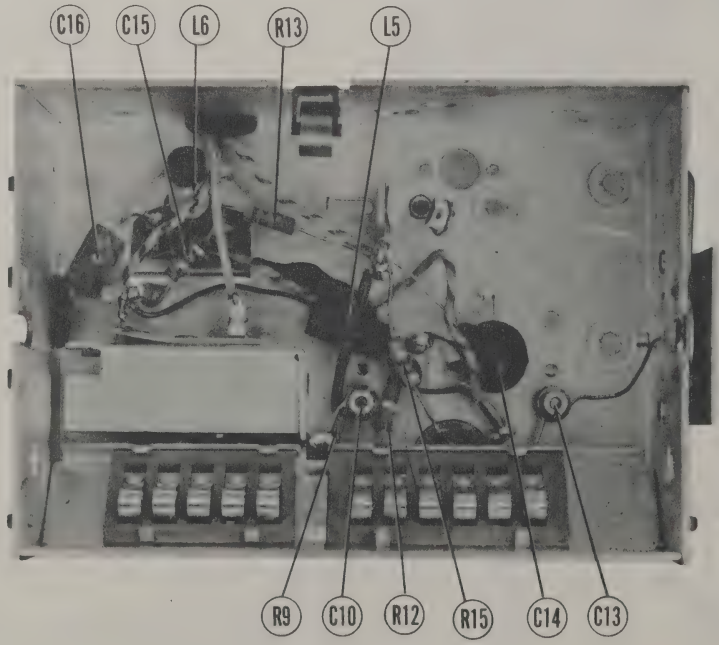
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1 Meg.	0Ω	.1Ω	0Ω	#2.2KΩ	#2.2KΩ	0Ω		
V 2	6J6	#4.7KΩ	#15KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AG5	1 Meg.	39Ω	.1Ω	0Ω	#1000Ω	#1000Ω	39Ω		
V 4	6AG5	1 Meg.	39Ω	.1Ω	0Ω	#1000Ω	#1000Ω	39Ω		
V 5	6AG5	4700Ω	150Ω	.1Ω	0Ω	#1000Ω	#1000Ω	150Ω		
V 6	6AL5	.3Ω	3.9 Meg.	.1Ω	0Ω	0Ω	0Ω	5.6KΩ		
V 7	12AU7	†4.8KΩ	1 Meg.	10KΩ	.1Ω	.1Ω	†5.8KΩ	1 Meg.	150Ω	0Ω
V 8	6AG5	100KΩ	0Ω	0Ω	.1Ω	#10KΩ	#10KΩ	0Ω		
V 9	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 10	6AT6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 11	6V6GT	Inf.	#.1Ω	†740Ω	†450Ω	220KΩ	130KΩ	#0Ω	#0Ω	
V 12	6SN7GT	1 Meg.	†24KΩ	560Ω	3.9 Meg.	†1.8KΩ	6.8KΩ	.1Ω	0Ω	
V 13	6SN7GT	2.1 Meg.	†850KΩ †2.5 Meg.	0Ω	2.2 Meg.	†1000Ω	5.6KΩ 560Ω	.1Ω	0Ω	
V 14	6SN7GT	760KΩ	†100KΩ	230KΩ	200KΩ	†60KΩ	0Ω	.1Ω	0Ω	
V 15	6BG6G	Inf.	.1Ω	100Ω	Inf.	1 Meg.	1 Meg.	0Ω	†8.3KΩ	TOP CAP ♦200Ω
V 16	6W4GT	0Ω	Inf.	Inf.	Inf.	†160Ω	Inf.	.1Ω	0Ω	
V 17	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦500Ω
V 18	5U4G	Inf.	15KΩ	Inf.	35Ω	Inf.	40Ω	Inf.	15KΩ	
V 19	12LP4	#0Ω	†5.8KΩ	PIN 10 ♦0Ω	PIN 11 15KΩ	PIN 12 #.1Ω				

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
MEASURED FROM JUNCTION OF C1C, C3, and C39.
† MEASURED FROM PIN 8 OF V18.
♦ MEASURED FROM PIN 3 OF V16.

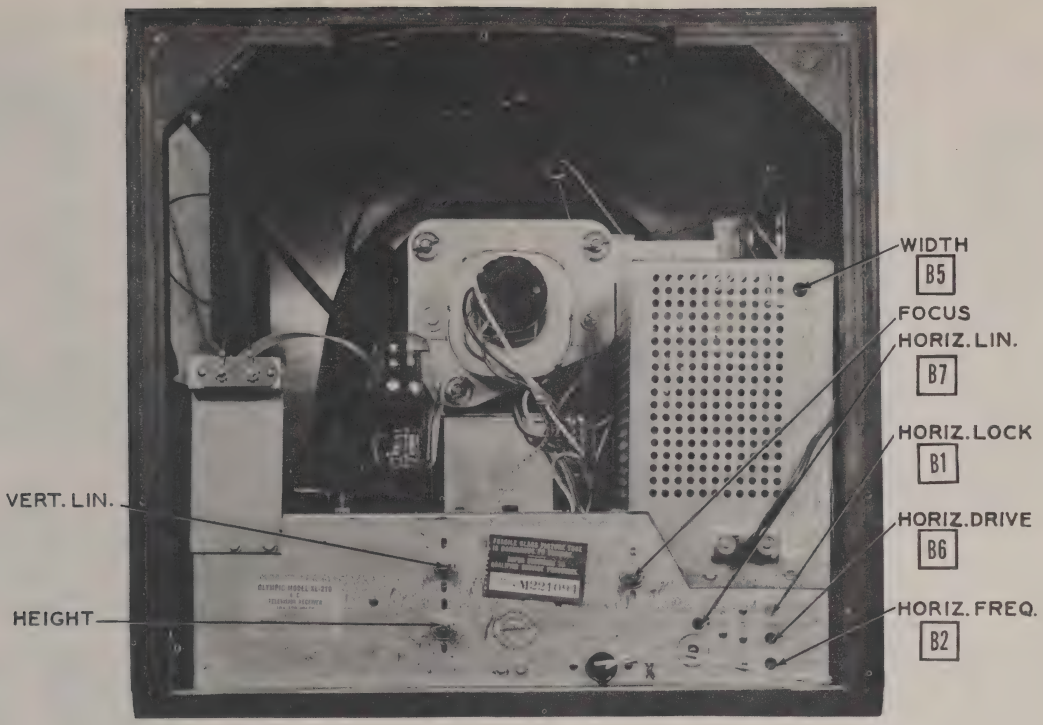
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR CHECK

Tune in a test pattern and turn the horizontal hold control fully clockwise. The picture should remain in synchronization or will slightly shift to the right with horizontal blanking bars appearing. The blanking bars may move from side to side and will be unstable. Turn the horizontal hold control fully counter clockwise; the picture should remain in "sync". If the signal is weak, 3 or 4 bars may be seen sloping downward to the left, in which case the receiver is operating normally and will be stable. If the receiver does not function as described, adjustment of the horizontal oscillator circuit will be necessary.

HORIZONTAL OSCILLATOR ADJUSTMENT (FIELD ADJUSTMENT)

1. Turn the horizontal locking range trimmer (B1) 1/2 turn out (counterclockwise) from the tight position. Turn the horizontal frequency trimmer (B2) one turn out (counter clockwise) from the tight position. Turn the brass adjustment screw (B3) of the horizontal oscillator coil L18 until it projects about 1/2 inch above the Tinnerman speed nut. Turn the horizontal hold control to the mid-position of its range, and the contrast control counterclockwise for a weak picture.
2. Adjust the horizontal waveform slug (B4) until the picture synchronizes horizontally.
3. While adjusting B4, check the range of the hold control to see that the picture remains in synchronization over the maximum range of the hold control. Turn the contrast control clockwise to the normal picture position. The picture should remain in 'sync' over most of the entire range of the hold control. If it does not, a slight readjustment of B1 and B2 may be required.

HORIZONTAL OSCILLATOR ADJUSTMENT (SHOP ADJUSTMENT)

Repeat the procedure as outlined in step one of the field adjustment of the horizontal oscillator circuit. Connect the low capacity probe of an oscilloscope to terminal "C" of L18. The pattern on the scope should be similiar to that of Figure 4. Adjust B4 until the broad and narrow peaks are the same amplitude. It may be necessary to slightly readjust B3 for the correct frequency setting since B4 is dependent upon the setting of B3. Remove the oscilloscope from terminal "C" of L18 and continue with step 3 of the "Field Adjustment" listed above.

WIDTH, DRIVE, AND HORIZONTAL LINEARITY ADJUSTMENTS.

Some models do not have the width adjustment B5. If the set has a width adjustment, turn it to the maximum clockwise position. (Fully in) Adjust the horizontal drive trimmer (B6) for maximum brightness without crowding the right side of the picture. Adjust the horizontal linearity slug (B7) for best linearity in the right half of the picture. Readjust B5 until the picture fills the mask horizontally.

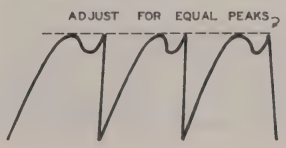


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	TBD	
B	R.F. Amp.	6BC5	6BC5	TBD	
V2	Converter	6J8	6J8	TBF	
V3A	1st Video IF	6AG5	6AG5	TBD	
B	1st Video IF	6BC5	6BC5	TBD	
V4A	2nd Video IF	6AG5	6AG5	TBD	
B	2nd Video IF	6BC5	6BC5	TBD	
V5A	3rd Video IF	6AG5	6AG5	TBD	
B	3rd Video IF	6BC5	6BC5	7BD	
V6	Video Det.-AGC-Sync. Limiter	6AL5	6AL5	6BT	
V7	Video Amp.	12AU7	12AU7	8A	
V8A	Sound IF Amp.	6AG5	6AG5	TBD	
B	Sound IF Amp.	6BC5	6BC5	TBD	
V9	Sound Discr.	6AL5	6AL5	6BT	
V10	AF Amp.	6AT6	6AT6	9BT	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Sync. Amp-Sync. Sep.	6SN7GT	6SN7GT	8BD	
V13	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V14	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V15	Hor. Output	6BG6G	6BG6G	5BT	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	5U4G	5U4G	5T	
V19A	Picture Tube	12LP4A	12LP4A	12D	Used in models XL-210 and XL-211
B	Picture Tube	12LP4	12LP4	12D	Used in models XL-210 and XL-211
C	Picture Tube	16DP4	16DP4	12D	Used in models XL-612 and XL-613
D	Picture Tube	16DP4A	16DP4A	12D	Used in models XL-613 and XL-613

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH8212E				TVL-3764	▲ Filter
B	40	450							■ Filter
C	60	200							▲ Decoupling
C2A	80	450		AFH82725A				TVL-2776	▲ Filter
B	10	450						TVA-1311,	■ Filter
C	125	25							▲ Vert. Output Cath. Decoupling
C3	50	250		PRS450/40		BR5025		TVA-1511	Fixed Trimmer
C4	5				TCZ-4.7		NPOK-5		Variable Trimmer
C5	5-3				529-3				Variable Trimmer
C6	5-3				529-3				RF Decoupling
C7	120			GP120M	D6-121		GP1K-120		RF Fil. Bypass
C8	1500			SD500M	D6-102		GP2L-001		Fixed Trimmer
C9	100			SD100KN750	TCN-100		N750L-100		Variable Trimmer
C10	5-3				529-3				Osc. Grid Cap.
C11	20			S120KNPO	TCZ-20		NPOK-20		Fixed Trimmer
C12	10			SD10DN750	TCN-10		N750K-10		Variable Trimmer
C13	5-3				529-3				RF Bypass
C14A	1000			BPD-2 x 001	DD-2-102		883-2 x 001	29C7	Conv. Fil. Bypass
B	1000								Fixed Trimmer
C15	10			CM10DNPO	TCZ-10		NPOK-10		RF Bypass
C16	120	500		GP120M	D6-121		GP2K-120		IF Coupling
C17	1500			BPD-0005	DD-152	1W5D15	811-0005	29C3	Filament Bypass
C18	600			[illegible]	D6-103	PTE6S1	811-01		RF Bypass
C19	25	400		P488-25		GT4P25			AGC Filter
C20A	1500			BPD-2 x 001	DD-2-152	1W5D15	883-2 x 001	29C6	AGC Filter
B	1500					1W5D15			1st V. IF Dec.
C21	330	500		[illegible]	D6-331	5W5T3	GP2K-330	1FM-335	IF Coupling
C22A	1500			BPD-2 x 001	DD-2-152	1W5D15	883-2 x 001	29C6	2nd V. IF Dec.
B	1500					1W5D15			AGC Filter
C23	330	500		[illegible]	D6-331	5W5T3	GP2K-330	1FM-335	IF Coupling
C24	75			CN75ZNPO	TCZ-75		NPOM-75		Fixed Trimmer
C25	90	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	3rd V. IF Cath.
C26	1500			GP1500M	D6-152	1W5D15	GP2L-0015	1FM-315	3rd V. IF Dec.
C27	330	500		[illegible]	D6-331	5W5T3	GP2K-330	1FM-335	IF Coupling
C28	10	500		[illegible]	D6-100	5W5Q	GP1K-10	MS-41	V. Diode Filter
C29	.047	400		P488-047	DF-503	PTE4S5		TM-15-4	Video Coupling
C30	.047	400		P488-047	DF-503	PTE4S5		TM-15-4	Video Coupling
C31	.22	400		P488-22		GT2P25		TM-2-4	Pic. Tube Cath.
C32	10	500		[illegible]	D6-100	5W5Q	GP1K-10	MS-41	S. IF Coupling
C33	1500			GP1500M	D6-152	1W5D15	GP2L-0015	1FM-315	S. IF Decoupling
C34	330	500		[illegible]	D6-331	5W5T3	GP2K-330	1FM-335	RF Bypass
C35	.0022	600		P488-[illegible]	D6-222	PTE6D2	GP2M-0022	TM-22	Audio Coupling
C36	.01	600		P488-[illegible]	D6-103	PTE6S1	811-01	TM-11	Audio Coupling
C37	.002	600		P488-[illegible]	D6-202	PTE6D2	GP2M-002	TM-22	De-emphasis
C38	.01	600		P488-[illegible]	D6-103	PTE6S1	811-01	TM-11	Audio Coupling
C39	.05	600		P488-05	DF-503	PTE4S5		TM-15-4	Bias Filter
C40	.005	600		P[illegible]	D6-502	PTE6D5	811-005	TM-35	Output Plate Byp.
C41	.047	600		P488-047	DF-503	PTE4S5		TM-15-4	Sync. Coupling
C42	220	500		[illegible]	D6-221	5W5T2	GP2K-220	1FM-325	Sync. Coupling
C43	330	500		[illegible]	D6-331	5W5T3	GP2K-330	1FM-335	Sync. Sep. Cath.
C44	.0022	600		P488-[illegible]	D6-222	PTE6D2	GP2M-0022	TM-22	Integrator Net.
C45	.005	600		P488-[illegible]	D6-502	PTE6D5	811-005	TM-35	Integrator Net.
C46	.005	600		P488-[illegible]	D6-502	PTE6D5	811-005	TM-35	Integrator Net.
C47	.0047	600		P488-0047	D6-472	PTE6D2	GP2M-0047	TM-35	Vert. Osc. Grid
C48	1	600		P488-1		PTE6P1		TM-1	Vert. Discharge
C49	25	400		P488-25		GT4P25		TM-2-4	Vert. Sweep Coupling
C50	150	500		[illegible]	D6-151	5W5T15	GP2K-150	1FM-315	Hor. Sync. Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	150	500		1468-00015	D6-151	5W5T15	GP2K-150	1FM-315	Voltage Divider
C52	.002	600		P488-002	D6-202	PTE6D2	GP2M-002	TM-22	Hor. Sync. Coupling
C53	.35	400		P488-35		GT4P25		TM-2-4	AFC Filter
C54	.023	400		P488-023	DF-303	PTE4S3		TM-13-4	AFC Filter
C55	.05	400		P488-05	DF-503	PTE4S5		TM-15-4	Hor. AFC Plate
C56	180	1000		1469-HV-0002					Hor. Osc. Grid
C57	.01	600		P488-01	D6-221	PTE6S1		TM-11	Fixed Trimmer
C58	.0022	600		P488-0022	D6-222	PTE6D2		TM-22	Hor. Discharge
C59	390	1000		1469-HV-0004					Horz. Sweep Coupling
C60	.05	600		P488-05	D6-503	PTE6S5		TM-15	Hor. Output Screen
C61	.33	400		P488-33		GT4P25		TM-2-4	Hor. Output Cath.
C62	.035	600		P488-033					Damper Filter
C63	.1	600		P488-1		PTE6P1		TM-1	Damper Filter
C64	.05	400		P488-05		PTE4S5		TM-15-4	Fixed Trimmer †
C65	4	1000		1469-HV-0000S					Hor. Feedback
C66	500	20000		HV30A	TV1-502				HV Filter
C67	.01	600		P488-01	D6-103	PTE6S1	811-01	TM-11	Line Filter
C68	.01	600		P488-01	D6-103	PTE6S1	811-01	TM-11	Line Filter
C69	220	500		1468-00025	D6-221	5W5T2S	GP2K-220	1FM-325	IF Coupling *
C70	1500			GP1500M	D6-152	1W5D15	GP2L-0015	1FM-315	DAGC Dec. *

† 16" models use a .02MFD in this application.
* Used only in models XL-210 and XL-211 serial numbers M-213, 001 to M-220, 999 and XL-612 and XL-613 serial numbers P225, 001 to P230, 000, and P-240, 001 to P-340, 350 inclusive.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	PT-1479	Concentrikit B11-137 *	RTV-2	SBB-505	Vert. hold control-front
B	50KΩ	½		B11-123 *			Horiz. hold control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
R2A	500KΩ	½	PT-1478	Concentrikit B11-123 *	RTV-36	SBB-571	Brightness control-front
B	10KΩ	½		B11-116 *			Contrast control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
R3A	1 Meg.	½	PT-1477	Q13-137	AG-63-Z	B-70-8	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
C	Switch		Not Req.	78-1	SWB	Not Req.	Attach to R3A per instructions
R4A	5000Ω	1	PT-1480	QU-114	AM-19-Z	AN-10	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5 Meg.	½	PT-1481	QU-239	AM-64-S	AN-83	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	2250Ω	4	PT-1484		RTV-9	SVS-926	Focus control

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED.
R7	3900Ω 10%	½		BTS-3900	Ant. Coil Shunt
R8	47KΩ	½		BTS-47K	AGC Network
R9	2200Ω	½		BTS-2200	RF Decoupling
R10	10KΩ 10%	½		BTS-10K	RF Coil Shunt
R11	4700Ω 10%	½		BTS-4700	Conv. Grid
R12	220KΩ	½		BTS-220K	Conv. Grid
R13	15KΩ	½		BTS-15K	Conv. Plate Load
R14	10KΩ 10%	½		BTS-10K	Osc. Grid
R15	4700Ω 10%	½		BTS-4700	Osc. Plate Load
R16	1000Ω	½		BTS-1000	AGC Network
R17	1000Ω	½		BTS-1000	AGC Network
R18	680Ω	½			1st Video IF Grid
R19	390Ω 10%	½			1st Video IF Cathode
R20	1000Ω	½		BTS-1000	1st Video IF Decoupling
R21	5600Ω 10%	½		BTS-5600	2nd Video IF Grid
R22	390Ω 10%	½			2nd Video IF Cathode
R23	1000Ω	½		BTS-1000	2nd Video IF Decoupling
R24	4700Ω 10%	½		BTS-4700	3rd Video IF Grid
R25	150Ω	½		BTS-150	3rd Video IF Cathode
R26	1000Ω	½		BTS-1000	3rd Video IF Decoupling
R27	1 Meg.	½		BTS-1 Meg.	AGC Network
R28	5600Ω	½		BTS-5600	Video Det. Diode Load
R29	1 Meg.	½		BTS-1 Meg.	1st Video Amp. Grid
R30	3300Ω 10%	2		BTS-3300	1st Video Amp. Plate Load
R31	1 Meg.	½		BTS-1 Meg.	2nd Video Amp. Grid
R32	150Ω	½		BTS-150	2nd Video Amp. Cathode
R33	3300Ω 10%	2		BTS-3300	2nd Video Amp. Plate Load
R34	1000Ω	½		BTS-1000	2nd Video Amp. Plate Load
R35	100KΩ	½		BTS-100K	Voltage Divider
R36	100KΩ	½		BTS-100K	Sound IF Grid
R37	10KΩ	½		BTS-10K	Sound IF Decoupling
R38	100KΩ 10%	½			Disc. Diode Load
R39	100KΩ 10%	½			Disc. Diode Load
R40	22KΩ	½		BTS-22K	De-emphasis
R41	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R42	330KΩ 10%	½		BTS-330K	AF Amp. Plate Load
R43	330KΩ 10%	½		BTS-330K	Voltage Divider
R44	180KΩ 10%	½		BTS-180K	Voltage Divider
R45	82KΩ 10%	½		BTS-82K	Output Grid
R46	390Ω 10%	½		BTS-390	Output Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R47	1 Meg.	½		BTS-1 Meg.	Sync. Amp. Grid
R48	560Ω	½		BTS-560	Sync. Amp. Cathode
R49	22KΩ	1		BTA-22K	Sync. Amp. Plate Load
R50	3.9 Meg. 10%	½		BTS-3.9 Meg.	Sync. Sep. Grid
R51	680Ω	½		BTS-680	Sync. Sep. Cathode
R52	22KΩ	½		BTS-22K	Integrator Network
R53	8200Ω 10%	½		BTS-8200	Integrator Network
R54	8200Ω 10%	½		BTS-8200	Integrator Network
R55	1 Meg.	½		BTS-1 Meg.	Vert. MV Grid
R56	1 Meg.	½		BTS-1 Meg.	Vert. MV Plate Load
R57	6.8 Meg. 10%	½		BTS-6.8 Meg.	Voltage Divider
R58	100KΩ	½		BTS-100K	Voltage Divider
R59	3300Ω	½		BTS-3300	Vert. Peaking
R60	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Output Grid
R61	560Ω 10%	½		BTS-560	Vert. Output Cathode
R62	56KΩ 10%	1		BTA-56K	Vert. Output Transformer Shunt-See Note 1
R63	560KΩ 5%	½		BTS-560K-5%	Hor. AFC Grid
R64	18KΩ 10%	½		BTS-18K	Hor. AFC Cathode
R65	100KΩ 5%	½		BTA-100K-5%	Hor. AFC Cathode
R66	8200Ω 10%	½		BTS-8200	Hor. AFC Filter
R67	3.3 Meg. 10%	½		BTA-3.3 Meg.	Voltage Divider
R68	120KΩ 10%	½		BTS-120K	Voltage Divider
R69	270KΩ 10%	½		BTA-270K	Voltage Divider
R70	100KΩ 5%	1		BTA-100K-5%	Hor. Osc. Grid
R71	10KΩ 10%	½		BTS-10K	Hor. Osc. Transformer Shunt
R72	22KΩ	3		BTS-22K	Hor. Osc. Transformer Shunt
R73	68KΩ	1		BTA-68K	Hor. Osc. Plate Load
R74	150KΩ	½		BTS-150K	Hor. AFC Feedback
R75	47Ω	?			Parasitic Suppressor
R76	1 Meg.	½		BTS-1 Meg.	Hor. Output Grid
R77	100Ω	1		BTA-100	Hor. Output Cathode
R78	8200Ω 10%	2		BTB-8200	Hor. Output Screen
R79	560KΩ 10%	½		BTS-560K	Hor. Feedback
R80	2.3Ω 10%	1			HV Rect. Filament
R81	1 Meg. 10%	2			HV Filter
R82	390Ω	1		BTA-390	Focus Coil Shunt-See Note 2
R83	390Ω	1		BTA-390	Focus Coil Shunt-See Note 2
R84	390Ω	1		BTA-390	Focus Coil Shunt-See Note 2
R85	33Ω	1		BTW-33	Filter
R86A	1500Ω 10%	3		1 3/4A-1500	Filter-Wire Wound
B	15KΩ 10%	10		1 3/4A-15K	Bleeder-Wire Wound
R87	1 Meg.	½		BTS-1 Meg.	AGC Rect. Diode Load-See Note 3
R88	3.9 Meg. 10%	½		BTS-3.9 Meg.	Delayed AGC Network-See Note 3
R89	3300Ω	½		BTS-3300	1st Video Amp. Cathode-See Note 3

Note 1. Used only with vert. output transformer part #TR-1764.
Note 2. Early production uses 1500Ω in this application.
Note 3. Used only in models XL-210 and XL-211, serial numbers M-213, 001 to M-220, 999 and XL-612 and XL-613, serial numbers P-225, 001 to P-230, 000, and P-340, 001 to P-340, 350, inclusive.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	720VCT	5VAC	6.3VAC	TR-1946	P-8159 ①	P-3059	TP-355
	② 1.9A	.240ADC	③ 3A	② 7.2A				
				SEC. 4				
				6.3VAC				
				③ .95A				

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	185Ω	1000Ω	TR-1473	A-8111 ②	A-3000 ②	TBO-1 ②	Vert. Block Osc. Trans.
T3A	480Ω	10.6Ω	TR-1914	A-8128	HVO-3	TFB-3	Hor. Output Trans.
	Tap ①	Tap ④					
	160Ω	6Ω					
		SEC. 2					
		0Ω					
B			TR-2092 ③				Alt. Hor. Output Trans.
C			TR-2092-1 ③				Alt. Hor. Output Trans.
T4	770Ω	8.2Ω	TR-1764	A-8112	A-3036	TBO-5 ②	Vert. Output Trans.
T5A	10Ω			DY-1	MD-3		Hor. Deflection Coil
B	65Ω						Vert. Deflection Coil
T6	268Ω						Focus Coil

② Drill one new mounting holes.
③ Used in some models.
④ Alternate for T3B.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	4500Ω	4.3Ω	293Ω	.5Ω	TR-1506	A-3849 ②	A-2930	RO-9 ②	① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	OLYMPIC PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.3Ω	SK-1788	ST-105 MOD. P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	OLYMPIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.240ADC	62Ω	2.6 Henries	CK-1346	C-2325 ②	C-2974	TR-3300②	② Drill one new mounting hole.

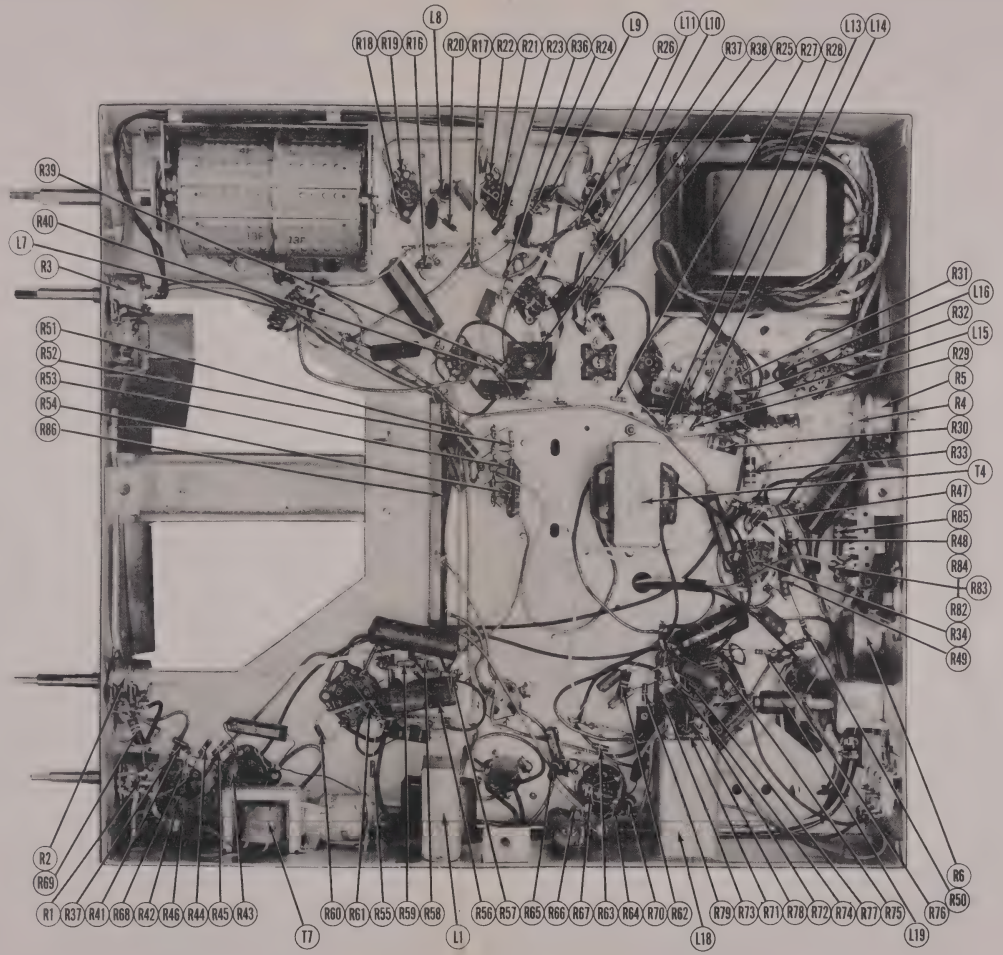
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	RF, Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5	Fil. Choke	0Ω				
L6	1st Video IF	.1Ω				
L7	Fil. Choke	0Ω				
L8	2nd Video IF	.1Ω				
L9	3rd Video IF	.1Ω				
L10	Cath. Trap-Sound Take-Off	.1Ω	0Ω			
L11	RF Choke	6Ω			19-1921 ①	Wound on 39KΩ resistor-white dot, -180 microhenries
L12	4th Video IF-Sound Trap	.3Ω	0Ω			Black dot-36 microhenries
L13	Peaking	4Ω				Wound on 39KΩ resistor -white dot, -180 microhenries
L14	Peaking	6.5Ω			19-1921 ①	Wound on 22KΩ resistor-black dot-120 microhenries
L15	Peaking	2.2Ω			19-1921 ②	Green dot-250 microhenries
L16	Peaking	8Ω			19-1922	
L17	Disc. Trans.	0Ω	0Ω			
L18	Hor. Osc. Trans.	85Ω	46Ω	TR-1475-1		
L19	Hor. Lin.	36Ω				
L20	Hor. Size	.2Ω				Not used on 16 inch models.

① Parallel with 39KΩ resistor.
② Parallel with 22KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M1	RF Tuner		
M2	Fuse		.25A 250V
M3	Ion Trap		
	Trimmer		3 section. Horiz. lock 10-160MMF, Horiz. freq. 50-370MMF, Horiz. drive 50-370MMF.



CHASSIS BOTTOM VIEW- RESISTOR AND INDUCTOR IDENTIFICATION

PHILCO
MODEL M-12C

Figure 1

GENERAL INFORMATION

The Philco Model M-12C is an automatic record changer and record player. One arm is used in conjunction with the automatic record changer mechanism, which is designed to play up to ten 12-inch records or twelve 10-inch records at a single loading, at the standard speed of 78 RPM. The changer will continue to play the last record until the mechanism is turned off.

A safety feature is employed in the pickup mechanism to prevent damage to the mechanism if, at any time, the pickup arm is handled during the change cycle.

The other tone arm is used, manually, to play the long-play records at a speed of 33-1/3 RPM. Upon completion of the record, the mechanism shuts off automatically by the tripping of the mercury switch. Upon returning the tone arm to its rest position, the mercury switch is reset to its "On" position, thereby returning power to the motor, which then must be turned off by the motor switch. The long-play tone arm is so designed that tracking is achieved with only 1/5 ounce needle pressure.

Nonstandard and home recordings should be played in the "Manual" position, using the automatic record changer tone arm.

The changer operates on 117 volts AC, at 60 cycles.

Manufactured by:

Philco Radio and Television Corporation
Philadelphia, Pennsylvania

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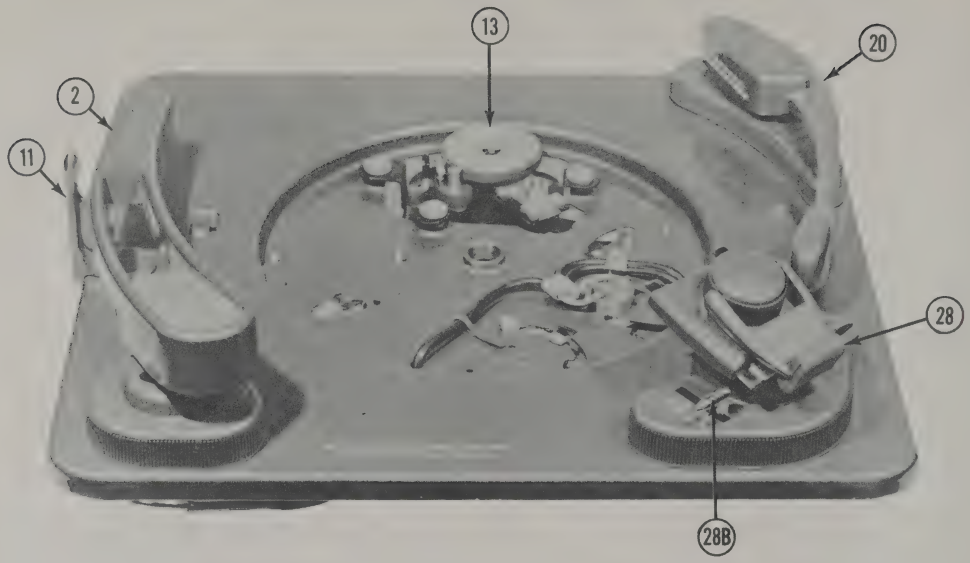


Figure 2

OPERATING PROCEDURE

Long-Play Tone Arm -

1. Be sure the automatic record changer tone arm (2) is hooked on to its rest (11).

2. Turn the record shelf and cover assembly (27) to the 12" position. This is to allow clearance for placing records on the turntable.

3. Place a long-play record on the turntable.

4. Set the "Std.-Play, Long-Play" control (28A) to the "Long-Play" position.

This operation actuates the selector link (53) and selector lever (63), which pivot the shift lever of the motor assembly (18) in toward the idler wheel (13). This causes the large pulley of the motor (which is driven by the motor shaft through a belt) to engage and drive the idler wheel (13). This, in turn, drives the turntable at the slow speed of 33-1/3 RPM.

The selector lever (63) also operates the double-pole, single-throw switch (89), which cuts out the output of the record changer tone arm (2) and closes the circuit for the record player tone arm (20).

5. Set the "Off-Man.-Auto.-Rej." control (28B) to "Man." position. This starts the motor and the rotation of the turntable.

6. Place the long-play tone arm (20) on the starting groove of the record.

7. Upon completion of the record, the mechanism shuts off automatically. This is due to the oscillation of the tone arm in the eccentric finish groove of the record, which is transmitted to the reset trip arm (40) through the pivot assembly (23). This action causes the trip finger of the trip lever arm to actuate the ratchet latch plate (46), thereby allowing the bracket clip assembly to drop and tip the mercury switch to the "Off" position. This opens the motor circuit and stops the turntable.

When the tone arm (20) is moved back to its rest post, the leg on the reset trip arm (40) contacts an ear of the bracket clip assembly, which tips the mercury switch to the "On" position. The motor circuit is now controlled only by the "On-Man.-Auto. -Rej." control (28B).

8. Remove the record from the turntable.

CAUTION: Do not store records on the turntable. This may cause the records to warp, resulting in "Wow" when they are being played.

Automatic Operation -

1. Turn the record shelf to the 10" or 12" position, depending on the size of records to be played.

2. Move the "Std.-Play, Long-Play" control (28A) to the "Std." position. This action causes the large pulley of the motor to be retracted, allowing the motor idler wheel (13) to engage the motor shaft to provide the turntable speed of 78 RPM.

3. Move the hold-down bumper (28) back out of the way.

4. Place as many as ten 12" records or twelve 10" records on the spindle, not intermixed, allowing them to rest on the spindle ledge and record shelf.

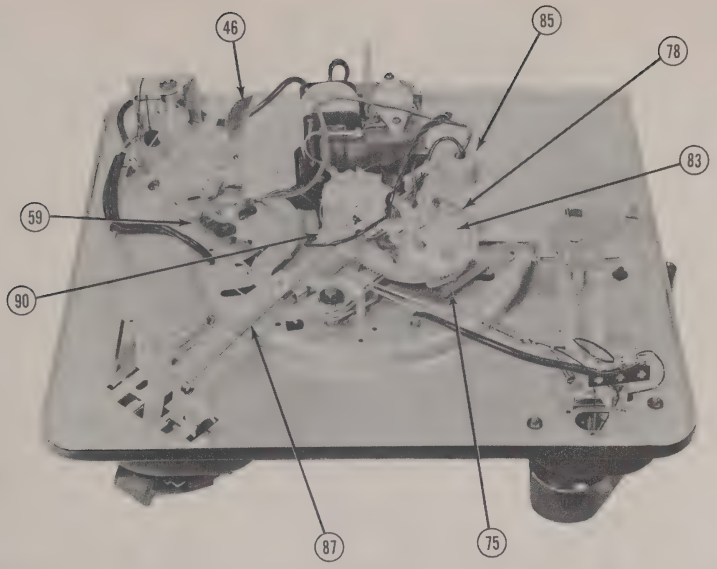


Figure 3

5. Place the hold-down bumper (28) on the top record. This is to hold the records in contact with the record shelf.

6. Push the "Off-Man.-Auto.-Rej." control (28B) to the "Rej." position and release. This starts the motor and the automatic operation. The changer will now play the entire stack of records, and will continue the last record until the control (28B) is turned to the "Off" position.

Manual Operation -

All odd-sized, warped, and home recordings should be played manually:

1. Set the "Std.-Play and Long-Play" control (28A) into position, depending on the type of records to be played - Standard 78 RPM or Long-Play 33-1/3 RPM.

2. Rotate the record shelf to the 12" position. This is for clearance only.

3. Move the record hold-down (28) out of the way.

4. Place a record on the turntable.

5. Move the "Off-Man.-Auto.-Rej." control (28B) to the "Man." position. This starts the motor and turntable rotating.

6. Place the correct tone arm on the record, depending on the type of record being played.

7. If Long-Play 33-1/3 records are being played, the changer will shut off, upon completion of the record, automatically: however, when the tone arm is moved out to its rest position, the mercury switch will be turned on. The changer must then be shut off manually by the "Off-Man.-Auto.-Rej." control. When Standard 78 RPM records are played, the changer must be turned to the "Off" position upon completion of the record.

CHANGE CYCLE

As the tone arm (2) rides into the eccentric groove of the record, its oscillation causes the trip finger of the trip receiver (70) to push against the screw of the trip plate assembly (83). This action moves the trip receiver from in front of the finger of the retractable segment on the bottom of the cam gear (78), allowing the segment to mesh with the turntable hub gear which is in constant rotation. This starts the change cycle.

As the cam gear rotates, cam surface (78A) actuates the lift actuator lever (61), which, in turn, pulls the short link (77), link spring (74) and pull-cord assembly (9), thus raising the pickup arm off the record. The pull cord (22), spring, and link assembly (59), attached to the long-play arm (20), are also connected to the lift actuator lever. This permits the long-play tone arm (20) to be lifted and set on its rest post if the record changer is put into a change cycle. Cam surface (78B) contacts and moves the pickup arm swing lever (62). This lever, through the linkage of the long link (79), spring (80) and the trip arm (71), which are fastened to the shaft and swivel (7A), swings the pickup arm (2) out against the rest post (11).

Cam roller (78C) of the cam gear (78) moves against the push-off actuator (64), which, in turn, operates the push-off mechanism, thus selecting and dropping a record to the turntable.

At approximately the same time the push-off mech-

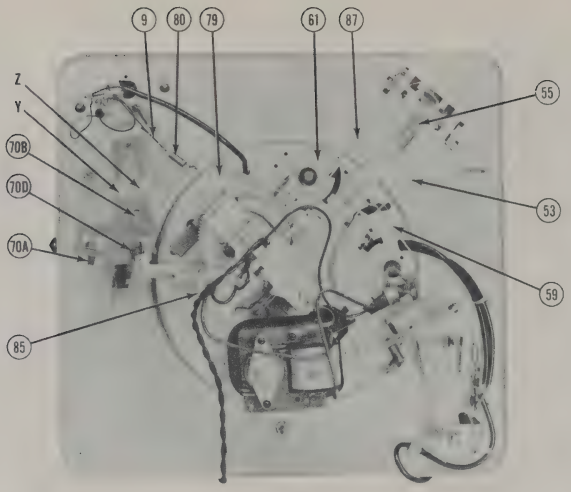


Figure 4

anism is actuated, the selector hinge (65) is moved by the cam gear (78) causing the feeler (66) to be raised above the baseplate. The movement of the feeler carries the 12-inch selector with it.

The swing lever (62) now moves the tone arm in for set-down. For 10" positioning, the trip arm stop (70A) moves against the finger of the selector hinge (65). With the presence of a 12" record on the turntable, the feeler (66) is depressed by the weight of the record. This pivots the 12" selector in the path of the trip arm stop (70A), thereby positioning the pickup arm for 12" set-down upon contact.

The tone arm lift lever (61) now lowers the tone arm to the starting groove of the record.

Finger "X" of the selector hinge (65) rides off the top cam surface of the cam gear (78), which allows the selector mechanism to be pivoted from in front of the trip arm stop, giving the tone arm free movement to track across the record.

The retractable segment of the cam now engages the trip plate (83), which pulls the segment away from contact with the turntable hub. The cam is now held in a neutral position by the engagement of the cam roller (78C) and the index lever (75). This completes the change cycle.

Reject Operation -

When the control (28B) is pushed in the direction of "Rej.", the slide control bar (90) is pulled against the trip plate (83) by the control link (87). This trips the mechanism and starts the change cycle; therefore, a record may be rejected any time, while playing, by moving this control.

Manual Control -

When the control (28B) is moved to the "Man.", position, the slide control bar (90) is moved against a flange of the retractable segment of the cam gear (78), thereby preventing the retractable segment from engaging the turntable hub gear.

ADJUSTMENTS

Tone Arm Positioning -

1. Remove the power plug.

2. Place a 10" record on the turntable.

3. Push the control lever (28B) to "Rej.", and release.

4. Rotate the turntable clockwise until the pickup arm moves in over the record and drops to approximately 1/2" above the turntable.

5. Loosen the clamp screw (73) on the trip arm (71).

6. Hold the pickup arm over the lead-in groove of the record.

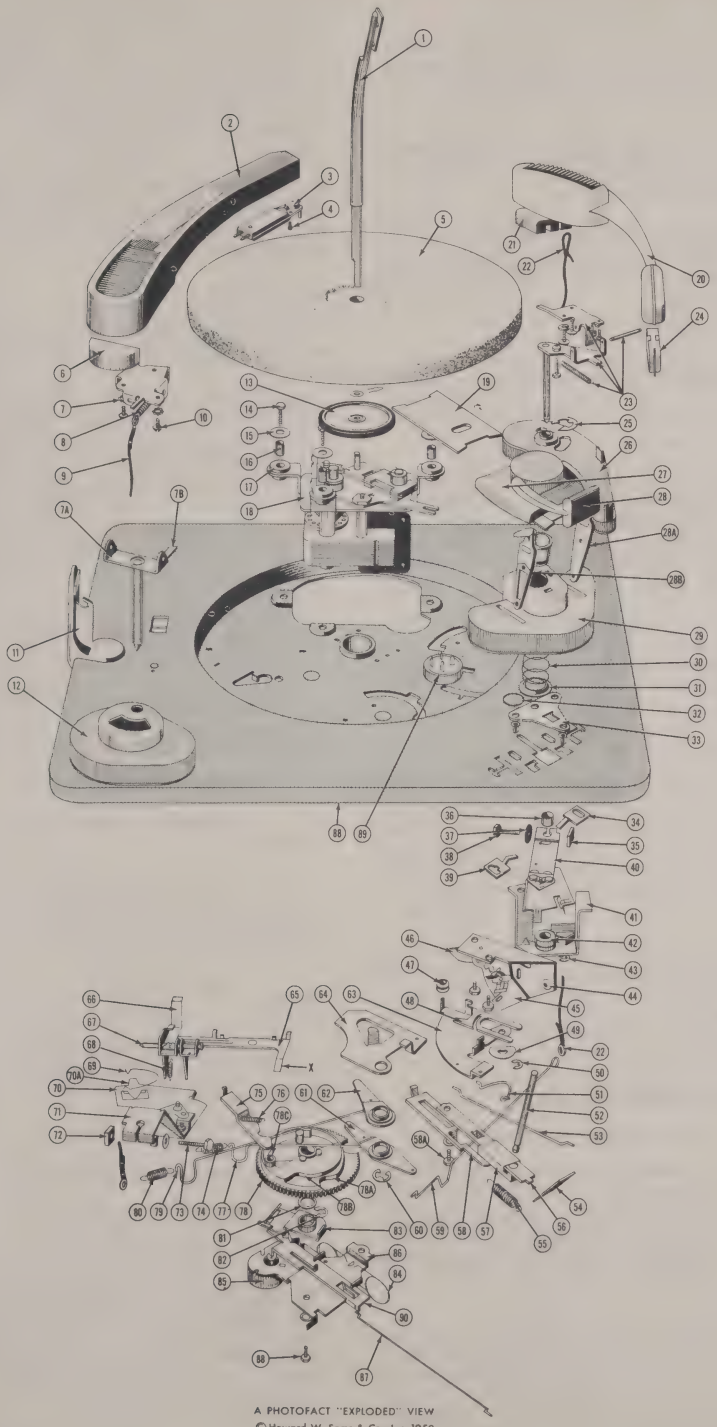
7. Set the trip arm (71) so that the trip arm stop (70A) is in contact with the selector hinge finger (65).

8. Tighten the clamp screw leaving a vertical clearance between the trip arm and base plate of 1/32".

This adjustment should be satisfactory for 12" set-down; however, if the 12" set-down is not satisfactory after this adjustment, further adjustment can be made by slightly bending the 12" selector to the right or left, depending on the direction the tone arm is to be moved.

Tone Arm Height -

With the changer out of cycle, place the tone arm next to the turntable. The needle point should clear the base plate by, at least, 1/16" and should not be any higher than the top of the turntable. To make the proper adjustment, bend the protruding ear (7B) of



A PHOTOFACT "EXPLODED" VIEW

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the swivel post (shown in exploded view). Bending the ear upward increases the clearance.

The correct height of the tone arm during the change cycle is when the lower edge of the pickup arm clears the top of the protruding hook on the rest post by not less than 1/8" and not more than 1/4".

Adjust the ear (7B) on the swivel post until a compromise is reached between the correct rest post clearance and base plate clearance.

Pickup Arm Vertical and Horizontal Timing -

Before making these adjustments, make the tone arm height and lift adjustments.

1. Vertical adjustment:

   (a) Remove the powerplug.

   (b) Push the control lever (28B) to the "Rej." position and release.

   (c) Rotate the turntable, by hand, in a clockwise direction, 3/4 of a revolution. (At this point, the leading edge of the cam surface (78A) is approximately 1/4" from the end of the lift actuator lever (61).)

   (d) Adjust the wire loop (77) by squeezing or opening the loop until the ear of the tone arm swivel post makes contact with the lower end of the cutout on the tone arm pivot assembly.

2. Horizontal Adjustment:

   (a) Rotate the turntable another 3/4 revolution from the point at which the vertical adjustment was made. At this point, the leading edge of the cam surface (78B) is approximately 1/4" from the end of the tone arm actuator lever (62).

   (b) Adjust the wire loop of the long link (79) and spring assembly (80), attached to the trip arm (71), by squeezing or opening the loop until the tone arm makes contact with the rubber bumper on the tone arm post (11).

Trip Finger and Trip Receiver Adjustments -

1. Place a record on the turntable.

2. Place the tone arm on the record with the needle resting in the eccentric groove of the record. In this position, the trip finger (78D), when riding over the ratchet screw on the trip plate (83), should be at an angle of 25° to 30° with respect to the screw. Adjust the screw (70B) to obtain correct adjustment (See Figure 4).

3. To adjust the trip receiver (70), place the tone arm on the record with the needle resting in the eccentric groove of the record. The vertical center line of the ratchet screw and the trip finger (78B) should coincide. To make the proper adjustment, loosen screw "Y" slightly and screw "Z" completely (Figure 4); then swing the trip receiver (70) to the right or left until the trip finger is centered over the ratchet screw. After this, tighten the screws. When the adjustment is made, care should be taken to prevent the trip receiver from being pulled in toward the trip arm too far, as this will prevent the trip arm stop (70A) from engaging the selector hinge by a minimum of 1/8". A medium between the above adjustments should be reached.

Check the set-down adjustment as it may have been affected slightly when making the above adjustments. Since these three adjustments are interrelated, it is best to check the other two adjustments when one adjustment is made.

Record Shelf Adjustment -

1. With the record changer out of cycle, turn the record shelf to the 10" position.

2. Loosen the two hex-head screws that hold the record shelf assembly to the base plate.

3. Place the Philco record shelf gauge, No. 45-1470 (also used for M-4, M-8 and M-9C), over the spindle and on the record shelf.

4. Adjust the record shelf assembly until the large, curved part of the gauge drops even with the record shelf lips.

5. Push the record shelf and gauge lightly against the spindle. Keep the lips of the record shelf in contact with the gauge.

6. Tighten the hex-head screws.

Push-Off Adjustments -

1. Remove the power cord.

2. Move the control lever (28B) to "Rej." and release.

3. Rotate the turntable 2-1/2 revolutions, by hand. At this point, the push-off actuator (64) is moved by the cam gear roller (78C) to its most forward position.

4. Loosen the bar locking screw (58A), Figure 4.

5. Squeeze the push-off bar ears (56 and 58) toward each other until the push-off slide plate (19) extends 1/32" beyond the lips of the shelf.

6. Tighten the screws.

RECORD PLAYER ADJUSTMENTS

Pickup Arm Needle Pressure -

The correct needle pressure for the Long-Play arm is 6 to 7-1/2 grams. To check the needle pressure, use the Philco gram scale, Part No. 45-9531. Place the scale on its side and set the pointer to the center line of the scale. This is the "O" point, and each small division on either side of "O" is equal to one gram. After the scale has been set, place it on the turntable with the guard on the scale in an open position, and at right angles.

Set the needle of the Long-Play tone arm into the

hole at the end of the pointer. Press down on the head of the pickup, and then let it spring back. Note the reading on the scale. Raise the pickup arm and return it slowly. Note the reading on the scale. The average of the two readings is the needle pressure; the difference between the two readings is the vertical friction. To correct needle pressure, adjust spring (23) of the pivot and shaft assembly (23) in the various notches on the swivel. The vertical friction should not exceed 2 grams.

Tone Arm Horizontal Friction -

1. Hold the gram scale flat and set pointer to "O."

2. Take the tone arm off the rest post and place counterweights on top of the rear end until the tone arm is balanced in horizontal position.

3. Place the pointed end of the scale against the side of the tone arm head and move toward the spindle. Note the reading on the gram scale while moving the tone arm throughout its entire travel. At no time should it require more than 2 grams of pressure to move the tone arm.

Pickup Cartridge Holder -

The pickup cartridge holder should be centrally spaced in the tone arm to prevent binding or rubbing of the pickup cartridge when it is vertically moved. In order to obtain correct adjustment, remove the tone arm (20), loosen the set screw holding the bracket in place, and centrally space the mounting. Leave a space of 1/32" between the tip of the ears on the holder and the inside surface of the tone arm. Tighten the screw and replace the tone arm.

Trip Switch Adjustment -

1. Place the tone arm (20) on the rest post.

2. Loosen the trip arm clamp screw (38).

3. Make sure the mercury switch is in a horizontal position with the bracket and clip assembly engaging the ratchet latch plate (46).

4. While holding the tone arm on the rest post, move the trip arm out until the leg on the trip arm (40) engages the bracket and trip ear, pivoting the bracket and trip enough so that there is approximately 1/32" clearance between the long ear of the bracket and clip and the cutout notch on the ratchet plate (46).

5. Tighten the clamp screw (38).

Trip Finger Adjustment -

1. Place the tone arm (20) in the finish groove of the record.

2. The trip finger should assume an angle of 25^{o} to 30^{o} when riding over the serrated portion of the ratchet latch (46). Adjust the screw on the trip arm receiver to obtain the proper angle.

TROUBLES

Mechanism Will not Stay in "Manual" or "Automatic" Position -

1. Index spring loose or broken.

Changer Trips Continuously -

1. Index spring loose or broken, thus allowing the slide control bar (90) to stay in the "Rej." position.

2. Slide control bar (90) binding in "Rej." position.

Changer Fails to Trip -

1. Retractable segment binding in open position.

2. Trip arm plate (83) binding.

3. Trip finger (70C), Figure 4, not adjusted properly (see adjustments on "Trip Finger and Trip Receiver Adjustments").

LUBRICATION

The Model M-12C record changer has been lubricated at the factory. Further lubrication is unnecessary. However, after a long period of time, or due to excessive use, or whenever a major part or assembly is to be replaced, the changer should be cleaned with carbon tetrachloride to remove all old grease, oil, and dirt.

The following parts are to be lubricated with a grease having a consistency of vaseline:

1. The push-off slide plate.

2. The three dimples and four upturned ears of the bridge assembly (86) and slide control bar (90).

3. Cam-gear teeth, cam surfaces, and cam-gear spindle.

4. All points that slide on base plate and other frictional surfaces.

5. Turntable shaft.

6. Tone arm shaft.

Parts to be oiled with S. A. E. 20 Oil:

1. Tone arm pivot pin where pin rides in elongated hole of tone arm - apply one drop.

2. Trip plate (83) bushing.

3. Spindle (1).

4. Cam-gear roller (78C).

CAUTION: Avoid overlubrication - overlubrication may cause sticking of parts. Do not allow any grease or oil to come in contact with the motor shaft, idler wheel, or turntable rim. If this occurs, remove the oil and grease immediately with carbon tetrachloride. Do not lubricate - at any time - the trip receiver (70), trip finger (70C), ratchet screw on trip plate (83), selector (66), or any other parts of the record-player section.

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	76-3926	Spindle	34	56-5742	Control Support
2	35-2675	Tone Arm Assembly - consists of Items 2, 3, 4, 6, 7, 7A, 7B, 8, 9 and 10	35		Trip Arm Clamp Nut
			36		Spacer
			37		Flat Washer
2	56-5758	Tone Arm Shell	38		Trip Arm Clamp Screw
3	35-2671-1	Cartridge - Shure P-30S	39	56-5742	Control Support
	45-1597	Needle	40	76-4198	Reset and Trip Arm Assembly
	45-3031	Knurled Nut	41		Support Bracket
4		Mounting Screws 4-40 x 1/4	42	56-5916	Thrust Bearing
5	35-3066-1	Turntable	43	1W60977	"E" Washer
6	56-5755	Counterweight	44		Rubber Grommet
7)			45	76-4196	Switch Bracket
7A)			46	76-4197	Ratchet Latch
7B)	76-3997	Shaft, Pivot Pin and Swivel Assembly	47		Rubber Grommet
			48	56-5986	Lock Plate
7B	56-5754	Pivot Pin	49	1W56306	Spring Washer
8	56-4603FA38	Bias Spring	50	1W60977	"E" Washer, Small
9	76-2982	Pull Cord Assembly	51	56-5995	"U" Spring
10		Mounting Screws 4-40 x 1/4	52	56-4595FA3	Push-Off Rod
11	56-5744	Tone Arm Rest	53	56-5991	Selector Link
12		Tone Arm Pivot Housing	54	56-4596FA3	Push-Off Hanger
13	35-1371	Motor Assembly - Consists of Items 13, 14, 15, 16, 17 and 18	55	56-4600FA38	Return Spring
			56	56-4597FA3	Push-Off Bar
			57	56-4599FA3	Safety Slider
13	45-6481	Idler Wheel	58	56-4774FA3	Rear Push-Off Bar
14		Mounting Screw 6 x 5/8	59	56-5990	Lifter Link
15		Washer	60	1W-60980	"E" Washer
16	56-4926	Spacer	61	76-4193	Link Actuator
17	54-4501	Mounting Grommet	62	76-2987	Actuator
18	35-1371	Motor	63	56-5985	Selector Lever
	45-648	Motor Pulley	64	56-4588FA3	Push-Off Actuator
	45-6479	Pulley Belt	65	56-4617FA3	Selector Hinge
19	56-4594	Push-Off Plate	66	56-4616FE15	Feeler
20	35-2686	Long-Play Tone Arm Assembly - Consists of Items 20, 21, 22, 23 and 24	67	1W36521FA3	Escutcheon Pin
			68	56-4670FA38	Feeler Spring
			69	56-4613FA38	Stop Spring
20	45-1610	Long-Play Tone Arm Shell	70	56-5981	Trip Receiver
21	56-5882	Counterweight	70A	56-4614	Trip Stop
22	76-2982-1	Pull Cord Assembly	71	76-4204	Trip Arm (Sub-Assembly)
23	76-4335	Pivot and Shaft Assembly	72		Clamp Screw Nut 10-32
24	45-1612	Pickup Cartridge	73		Clamp Screw 10-32 x 1"
	45-1613	Needle	74		Spring for Short Link
25	1W60981	"E" Washer for Long-Play Tone Arm Bearing	75	56-4585FA3	Index Lever
			76	56-4603FA38	Index Spring
	56-5903	Long-Play Tone Arm Bearing	77	56-460TFA3	Short Link
26	56-5987	Stanchion (Long-Play Tone Arm)	78	76-3995	Cam Gear Assembly
			79	56-4606FA3	Long Link
27	76-3994	Push-Off Cover	80		Spring for Long Link
28	54-4592	Hold-Down Bumper	81	1W52627	Cam Gear Washer
28A	76-3993	Standard Long-Play Control Button	82	1W60980	"E" Washer
			83	76-2990	Trip Plate
28B	76-3993	Rej.-Auto.-Man.-Off Control Button.	84	56-5644	Spindle Spring
			85		On-Off Switch
29	56-5984FJ6	Push-Off Saddle	86	76-3998	Bridge Assembly
30	56-4630FA38	Shelf Spring	87	56-4589FA3	Control Link Rod
31	56-4627FA3	Spring Retainer	88	76-4201	Base Plate Assembly
32	56-4628FA38	Spring Ring	89	42-1873	Switch
33	56-5743	Fulcrum Plate	90		Slide Control Bar

RCA VICTOR MODEL A55

TRADE NAME	RCA Victor, Model A55 (Ch. RC-1087)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12 A6 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.26 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to second score mark from left hand end of dial backing plate.
Turn function switch to "Radio" position (fully clockwise).
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of the signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 12SA7 (V1). Low side to B-.	455KC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6	"
4.		Loop	600KC	"	"	A7	Adjust for maximum output while "rocking" tuning gang. Repeat steps 2, 3 and 4 until no further improvement can be made.

FOR SERVICE INFORMATION ON RECORD CHANGERS SEE RCA MODEL RP168 PHOTOFACT SET #72 FOLDER #10 AND MILWAUKEE MODEL 11600 PHOTOFACT SET #73 FOLDER #7

* Repeat step 1 alternately loading primary or secondary with 22KΩ resistor.

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RCA VICTOR
MODEL A55 (Ch. RC-1087

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MODEL A55 (Ch. RC-1087

PARTS LIST AND DESCRIPTIONS

RCA VICTOR MODEL A55

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	120	150	74678			UPT150D 15		TVL-3448	▲ Filter
B	120	150				BR502A		TVA-1206	■ Filter
C	40	25							▲ Output Cathode
C2	.05	400	73553	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	56		71924	8I56	D6-560	5W5Q5	GPIK-56	1FM-45	Osc. Grid Cap.
C4	120	500	39630	1468-00015	D6-121	5W5T15	GPIK-120	1FM-315	Diode RF Filter
C5	.0035	400	70604	P688-0033	D6-332	PTE6D3	GP2M-0033	6TM-D3	Tone Comp.
C6	.05	400	73553	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C7	.05	400	73553	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C8	.007	400	70608	P488-0068	D6-682	PTE6D6	811-01	6TM-D68	Audio Coupling
C9	.015	200	70572	P288-015		PTE6S15		6TM-S15	Tone Comp.
C10	.02	200	70611	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C11	.007	200	70608	P488-0068	D6-682	PTE6D6		6TM-D68	Tone Comp.
C12	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C13	120	500	39630	1468-00015	D6-121	5W5T15	GPIK-120	1FM-315	AF Amp. Plate
C14	.003	400	70603	P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	Tone Comp.
C15	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C16	.005	400	73920	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C17	.05	400	73553	P488-05	DF-503	PTE6S5		72P51	Line Isolation
C18	.05	400	73553	P488-05	DF-503	PTE6S5		4TM-S5	Line Filter

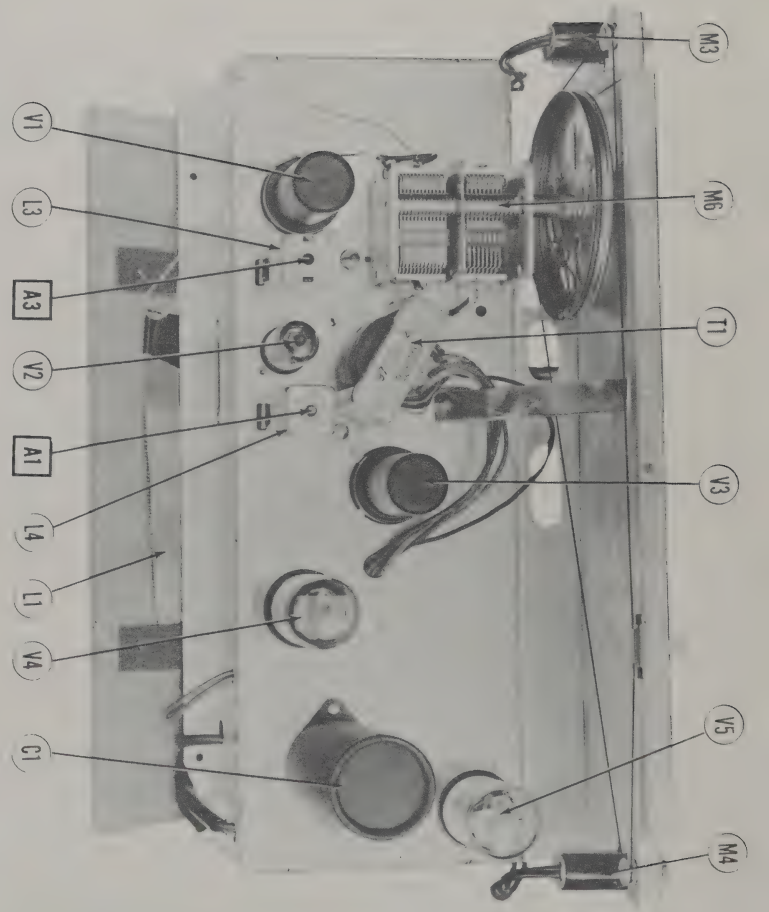
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5 Meg.	½	71596	Q18-139XX	AT-95		Volume control-tapped at 250KΩ & 500KΩ
B	Shaft		Not Req.	Not Req.	FS-3		Attach to R1A per instructions
R2A	2 Meg.	½	74761	Q11-139	AG-83-S	B-75-S	Tone control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R3	100Ω	½			Parasitic Suppressor
R4	22KΩ	½		BTS-22K	Osc. Grid
R5	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R6	270Ω	½		BTS-270	IF Amp. Cathode
R7	470KΩ	½		BTS-470K	Det. Diode Load
R8	56KΩ	½		BTS-56K	Diode Filter
R9	47KΩ	½		BTS-47K	Tone Compensation
R10	15KΩ	½		BTS-15K	Tone Compensation
R11	33KΩ	½		BTS-33K	Tone Compensation
R12	27KΩ	½		BTS-27K	Tone Compensation
R13	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R14	220KΩ	½		BTS-220K	AF Amp. Plate
R15	470KΩ	½		BTS-470K	Output Grid
R16	150Ω	½		BTS-150	Output Cathode
R17	1000Ω	1		BTA-1000	Filter
R18	33Ω	1	74768		Surge Limiter-Wire Wound
R19	220KΩ	½		BTS-220K	Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3500Ω	4.6Ω	365Ω Tap ② 23Ω	.7Ω	74677	A-3330 ①	A-3031 ①	RO-3 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-117		
SP1	PM	4.6Ω	74679	MOD. P8-T	8A21	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	1"	74758			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
L1	Loop Ant.	.9Ω		74766		
L2	Osc. Coil	1Ω	5.2Ω	74448	14-1073	
L3	1st IF	14Ω	14Ω	74918	16-6758	
L4	2nd IF	15Ω	15Ω	73037	16-6758 *	* Add 150MMF capacitor from diode return lead to ground.

PHONO CARTRIDGE and NEEDLE

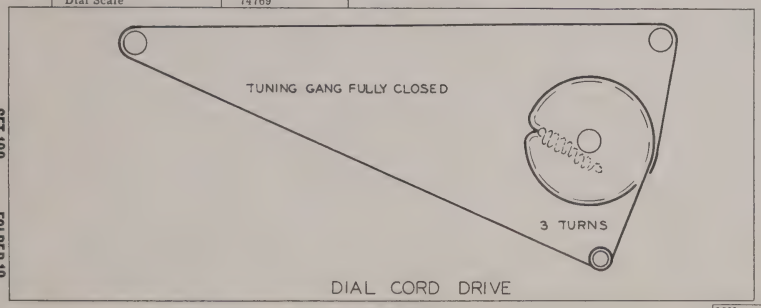
ITEM No.	REPLACEMENT DATA					REMARKS
	RCA PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		CQ-J	Q-33(J)	W21AR	A65MG	RCA RP168 (45RPM)
M2		AGD-J	"A"	W22AB	A62A A65MG	Milwaukee 11600 (78 & 33 1/3 RPM)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M3	Bayonet	3.2	.16		71116		Type #1490.
M4	Bayonet	3.2	.16		71116		Type #1490.

MISCELLANEOUS

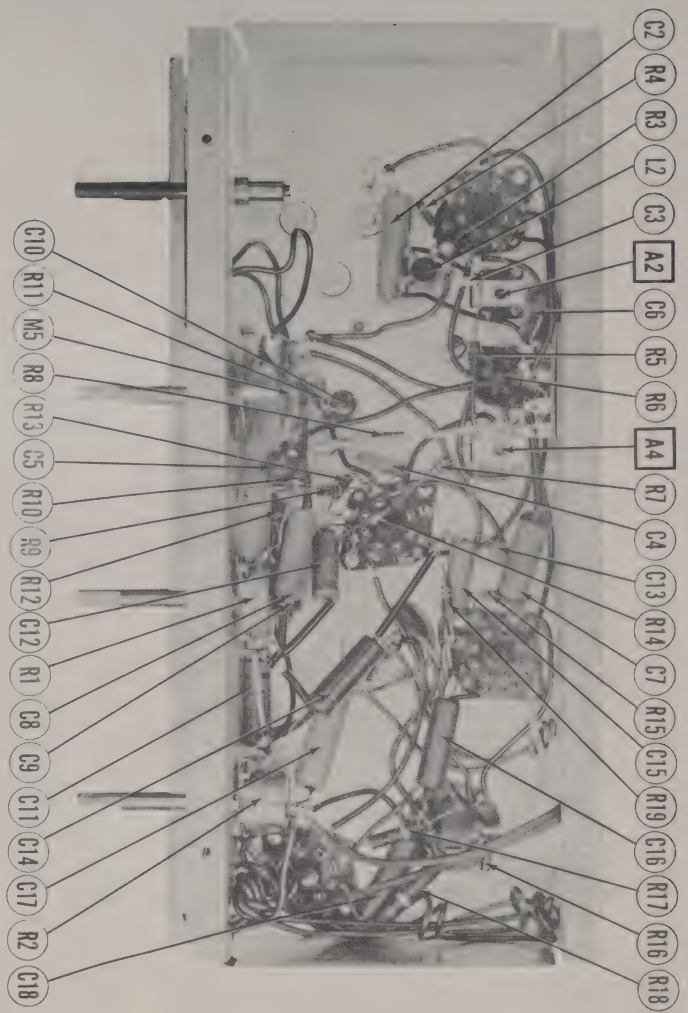
ITEM No.	PART NAME	RCA PART No.	NOTES
M5	Switch	74762	Function
M6	2 Gang Var. Cap.	74763	(28-532MMF, 17-156MMF)
	Dial Scale	74769	



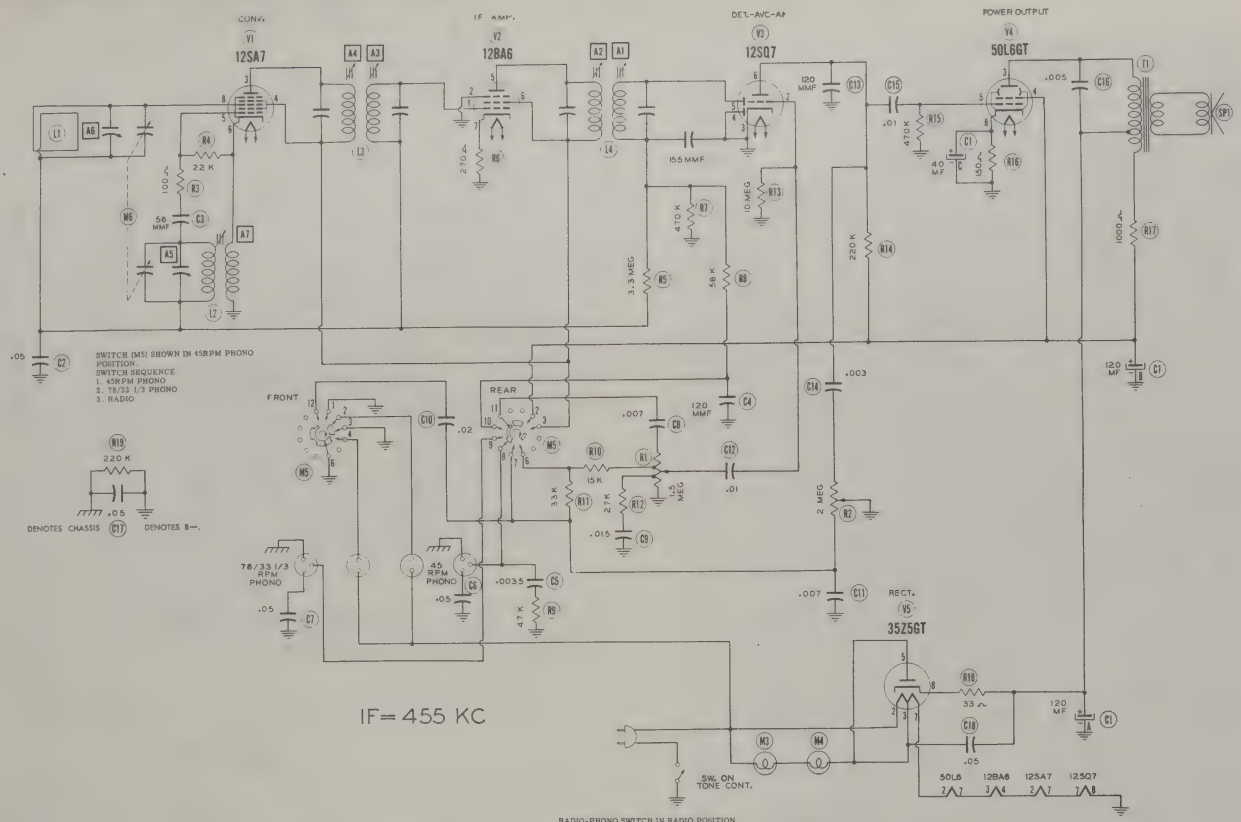
SET 109 FOLDER 10

RCA VICTOR MODEL A55

CHASSIS—BOTTOM VIEW



RCA VICTOR MODEL A55



RADIO-PHONO SWITCH IN RADIO POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	34VAC	90VDC	6 UVDC	0V	12VAC	-.1VDC	
V 2	12BA6	-.1VDC	0V	34VAC	36VAC	90VDC	90VDC	2.3VDC	
V 3	12SQ7	0V	-.5VDC	0V	0V	-.2VDC	60VDC	12VAC	0V
V 4	50L6GT	0V	85VAC	100VDC	90VDC	0V	0V	36VAC	6VDC
V 5	35Z5GT	0V	117VAC	120VAC	117VAC	120VAC	112VDC	86VAC	115VDC

RADIO-PHONO SWITCH IN "RADIO" POSITION
1 MEASURED WITH VTVM
1 MEASURED FROM PIN 8 OF V5

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	27Ω	1KΩ	1KΩ	22KΩ	1Ω	1Ω	3.8Meg
V 2	12BA6	3.8Meg	0Ω	27Ω	41Ω	1MΩ	1KΩ	270Ω	
V 3	12SQ7	220KΩ	1Meg	0Ω	0Ω	0Ω	470KΩ	220KΩ	1Ω	0Ω
V 4	50L6GT	INF.	0Ω	127Ω	1KΩ	470Ω	0Ω	4Ω	150Ω
V 5	35Z5GT	INF.	120Ω	115Ω	120Ω	115Ω	150Ω	90Ω	55KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

RCA VICTOR MODELS
T164 (CH. KCS40), TC165, TC166, TC167, TC168 (CH. KCS40A), 6T72 (CH. KCS40B)

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MODEL TC168

RCA VICTOR MODELS
T164 (CH. KCS40), TC165, TC166, TC167, TC168 (CH. KCS40A), 6T72 (CH. KCS40B)

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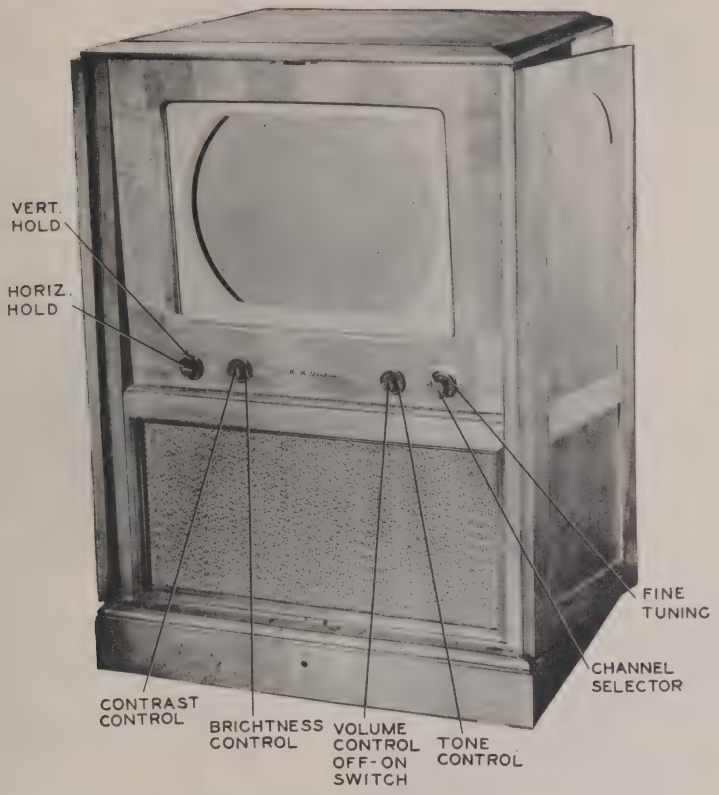
RCA VICTOR MODELS T164, TC165, TC166, TC167, TC168, 6T72 (Ch. KCS40, A, B)



RCA VICTOR MODEL TC-168

TRADE NAME	RCA Victor Models T164 (Ch. KCS40), TC165, TC166, TC167, TC168 (Ch. KCS40A), 6T72 (Ch. KCS40B)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty Four
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	2.1 Amp. at 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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RCA VICTOR MODELS T164, TC165, TC166, TC167, TC168, 6T72 (Ch. KCS40, A, B)

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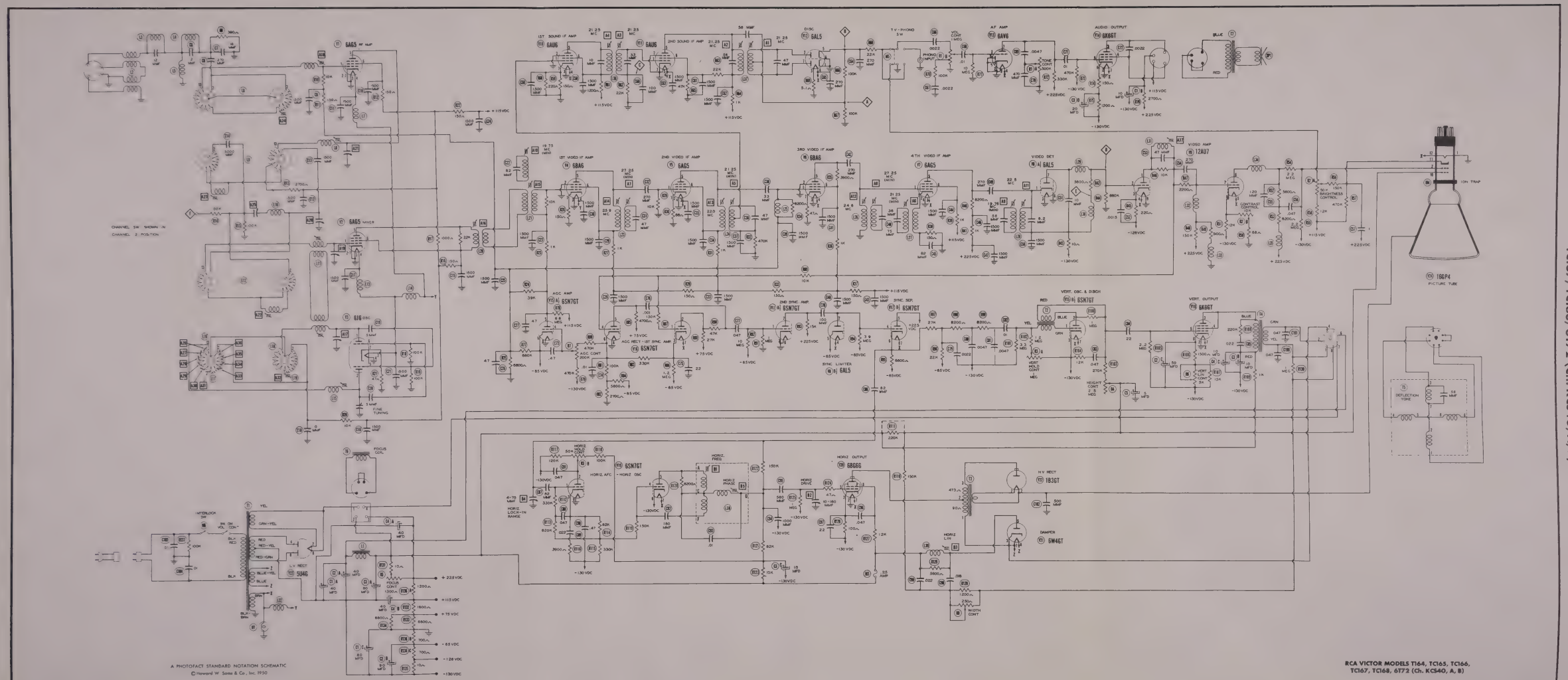
RCA VICTOR MODELS T164, TC165, TC166, TC167, TC168, 6T72 (Ch. KCS40, A, B)
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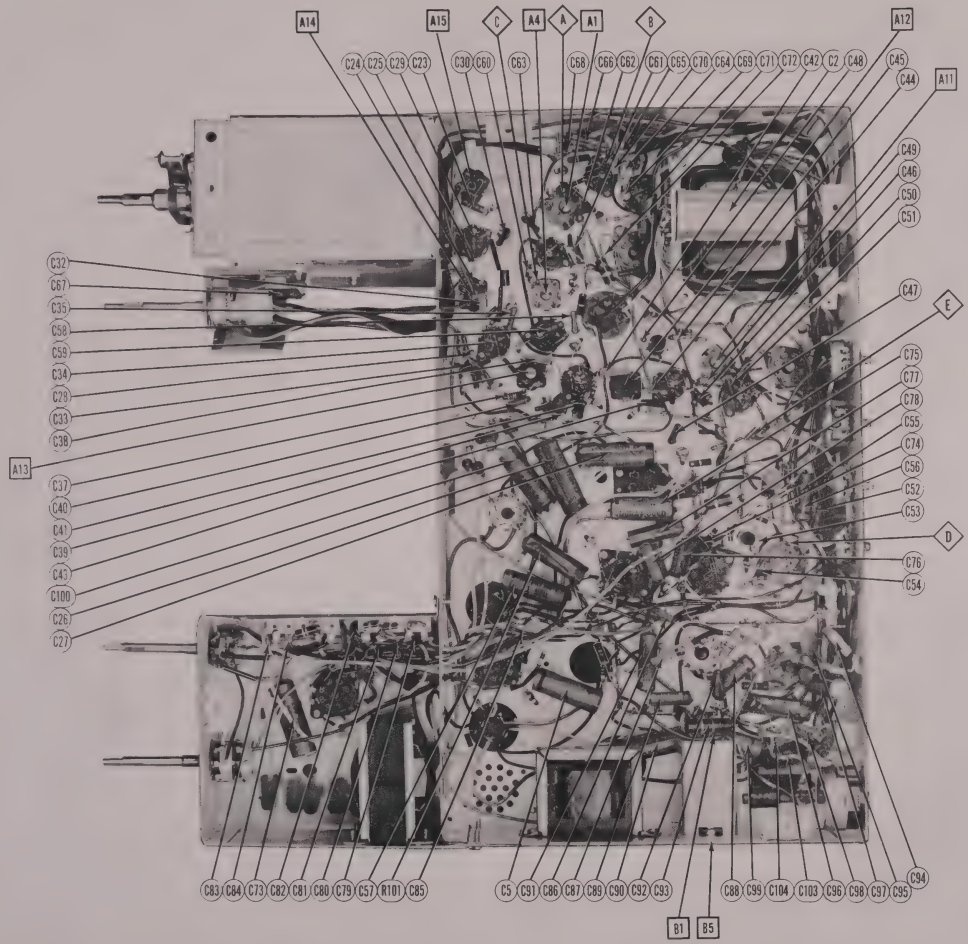
RCA VICTOR MODELS T164, TC165, TC166, TC167, TC168, 6T72 (Ch. KCS40, A, B)

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the horizontal output tube (V20) from its socket.
Remove local oscillator tube (V3) to prevent erroneous indications.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V11). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Detune A1. Adjust A2 for maximum deflection.
2.	.05MFD	"	"	"	DC Probe to Point (B). Common to chassis.	A1	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	"	"	DC Probe thru 10KΩ to Point (C). Common to chassis.	A3, A4	Adjust for maximum deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. Amp. thru 33KΩ to Point (C). Low side to chassis.	A3, A4	Adjust for maximum amplitude and symmetry as per figure 1.
2.	.05MFD	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A1, A2	Adjust A1 to place 21.25MC at center of diagonal line as per figure 2. Adjust A2 for maximum amplitude and straightness of diagonal line. Continue with step 4.

VIDEO IF ALIGNMENT

Remove the AGC amplifier tube (V15) and connect a 250KΩ potentiometer between pins 5 and 6. Connect the DC Probe of a VTVM at the junction of R24 and C27 and the common lead to chassis. Adjust potentiometer for -12 volts readings.

Turn the channel selector switch to the blank position between channel 2 and channel 13.

Before attempting step 11 connect a 330Ω carbon resistor across the primary's of L23, L24, L26 and L28. Connect the VTVM as outlined above and adjust the 250KΩ potentiometer for 0-2 volts reading.

It should be noted that both leads of the VTVM are at a -120 volts potential. Avoide touching or grounding the VTVM case.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	Not used	21.25MC (Unmod.)	As described above	Use VTVM. DC Probe to Point (D). Common to Point (E).	A5, A6	Adjust for MINIMUM deflection.
5.	Direct	"	"	27.25MC	"	"	A7, A8	"
6.	Direct	"	"	19.75MC	"	"	A9, A10	"
7.	Direct	"	"	23.5MC	"	"	A11	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -2 volts reading.
8.	Direct	"	"	24.6MC	"	"	A12	"
9.	Direct	"	"	22MC	"	"	A13	"
10.	Direct	"	"	25.9MC	"	"	A14	"
11.	Direct	"	24MC (10MC SWP)	22.05MC 24.75MC	"	Vert. Amp. to pin 1 (plate) of 12AU7 (V9). Low side to chassis.	A15, A16	Adjust for response curves similar to figure 3 with markers as shown. Remove 330Ω resistors from L23, L24, L26 and L28. Readjust 250KΩ potentiometer to read -12 volts at junction of R24 and C27.
12.	Direct	"	"	22.1MC 25MC 25.75MC 26.5MC	"	"		Check for response curve similar to figure 4. The 25.75MC marker should be at 45% of response. If necessary, SLIGHTLY retouch A-11 thru A16 for proper response.

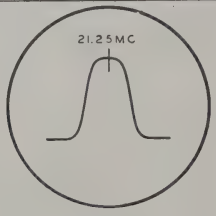


FIG. 1

FIG. 2

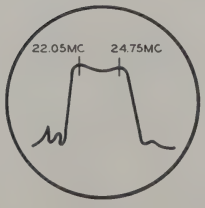


FIG.3

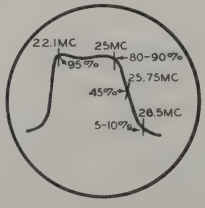


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

Connect a VTVM at the junction of R24 and C25 and adjust a 250KΩ potentiometer, as used in Video IF Alignment, for -3.5 volts reading.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Replace the local oscillator tube V3 in its socket.
Remove the 1st Video IF tube (V4) from its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	Not used	215.75MC (Unmod.)	13	Use VTVM. DC Probe to Point (B). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	Vert. Amp. to Point (F). Low side to chassis.	A18, A19, A20, A21	Adjust for flat topped response curve similar to figure 5 with markers above 70%.
15.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A18	Adjust for maximum amplitude and minimum slope of top part of curve.
16.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"		Check for response curve similar to figure 5. If markers are below 70% on any channel make a slight readjustment of A18, A19, A20, A21 with channel selector on that channel. Recheck other high band channels for optimum response.
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			213MC (10MC SWP)	211.25MC 215.75MC	13			
17.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	Vert. Amp. to Point (F). Low side to chassis.	A22, A23, A24, A25	Adjust for flat topped response curve similar to figure 5 with markers above 70%.
18.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check for response curve similar to figure 5. If markers fall below 70% on any channel make a slight readjustment of A22, A23, A24 and A25 with channel selector on that channel. Recheck other low band channels for optimum results.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Disconnect the 250KΩ potentiometer and replace the AGC amplifier tube (V15) and the 1st Video IF tube (V4).
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point (B). Low side to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A26	
			203.75MC	11		A27	
			197.75MC	10		A28	
			191.75MC	9		A29	
			185.75MC	8		A30	
			179.75MC	7		A31	
			87.75MC	6		A32	
			81.75MC	5		A33	
			71.75MC	4		A34	
			65.75MC	3		A35	
			59.75MC	2		A36	

4.5MC TRAP ADJUSTMENT

Connect a jumper across terminals of L24 trap. Tune in a strong station signal and if a 4.5MC beat is seen in the picture adjust trap coil A37 until beat disappears.

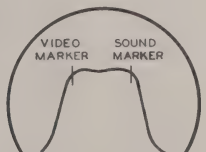


FIG.5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V.	0V.	6.3VAC	85VDC	110VDC	0V.		
V 2	6AG5	-1.2VDC	0V.	0V.	6.3VAC	105VDC	105VDC	0V.		
V 3	6J6	55VDC	55VDC	6.3VAC	0V.	§-3.5VDC	§-3.5VDC	.2VDC		
V 4	6BA6	.1VDC	0V.	0V.	6.3VAC	95VDC	95VDC	1.7VDC		
V 5	6AG5	0V.	.8VDC	6.3VAC	0V.	100VDC	100VDC	.8VDC		
V 6	6BA6	-.6VDC	0V.	0V.	6.3VAC	65VDC	100VDC	.7VDC		
V 7	6AG5	0V.	1VDC	6.3VAC	0V.	180VDC	115VDC	1VDC		
V 8	6AL5	-135VDC	-65VDC	0V.	6.3VAC	-65VDC	0V.	-135VDC		
V 9	12AU7	-32VDC	-135VDC	-130VDC	6.3VAC	6.3VAC	105VDC	-19VDC	-17VDC	0V.
V 10	6AU6	-.4VDC	0V.	0V.	6.3VAC	115VDC	115VDC	.5VDC		
V 11	6AU6	-.4VDC	0V.	0V.	6.3VAC	115VDC	65VDC	0V.		
V 12	6AL5	0V.	-.2VDC	1.2VAC	6.3VAC	-.1VDC	0V.	-.2VDC		
V 13	6AV6	-.5VDC	0V.	0V.	6.3VAC	0V.	0V.	80VDC		
V 14	6K6GT	0V.	0V.	125VDC	115VDC	-125VDC	0V.	6.3VAC	-110VDC	
V 15	6SN7GT	-140VDC	140VDC -20VDC	-135VDC	-80VDC -65VDC	.2VDC	-65VDC	6.3VAC	0V.	
V 16	6SN7GT	-27VDC	75VDC	-25VDC	-30VDC	75VDC	-24VDC	6.3VAC	0V.	
V 17	6SN7GT	-1.3VDC	170VDC	0V.	-65VDC	225VDC	-60VDC	6.3VAC	0V.	
V 18	6K6GT	0V.	0V.	210VDC	210VDC	-100VDC	-100VDC -135VDC	6.3VAC	-90VDC -100VDC	
V 19	6SN7GT	-120VDC	2VDC	-150VDC	-185VDC	65VDC	-85VDC	6.3VAC	0V.	
V 20	6BG6G	0V.	0V.	-120VDC	0V.	-140VDC	-120VDC	6.3VAC	140VDC	TOP CAP *
V 21	6W4GT	0V.	0V.	250VDC	0V.	220VDC	0V.	¶	¶	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	5U4G	0V.	250VDC	0V.	235VAC	0V.	235VAC	0V.	250VDC	
V 24	16GP4	0V.	-1.3VDC	PIN 10 225VDC	PIN 11 100VDC	PIN 12 6.3VAC				

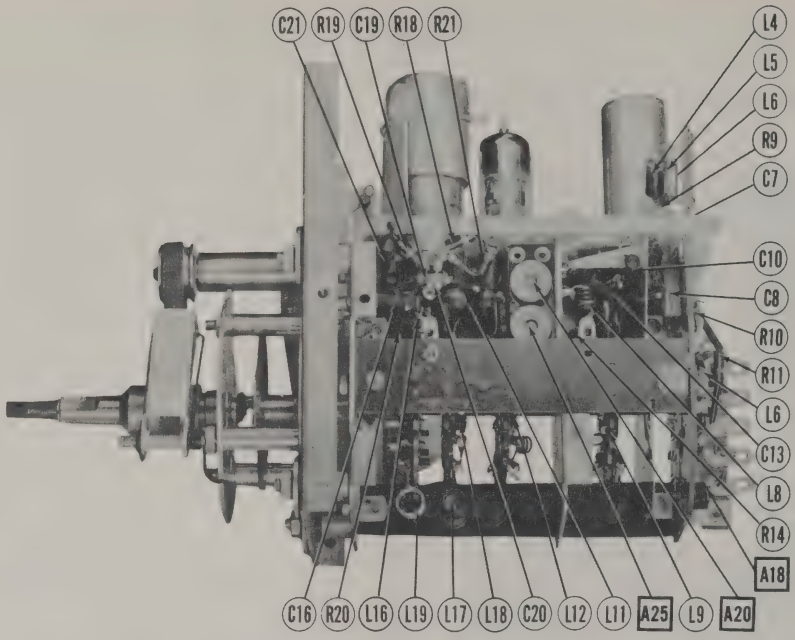
TV-PHONO SWITCH IN "TV" POSITION.
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.
* DO NOT MEASURE.

RESISTANCE READINGS

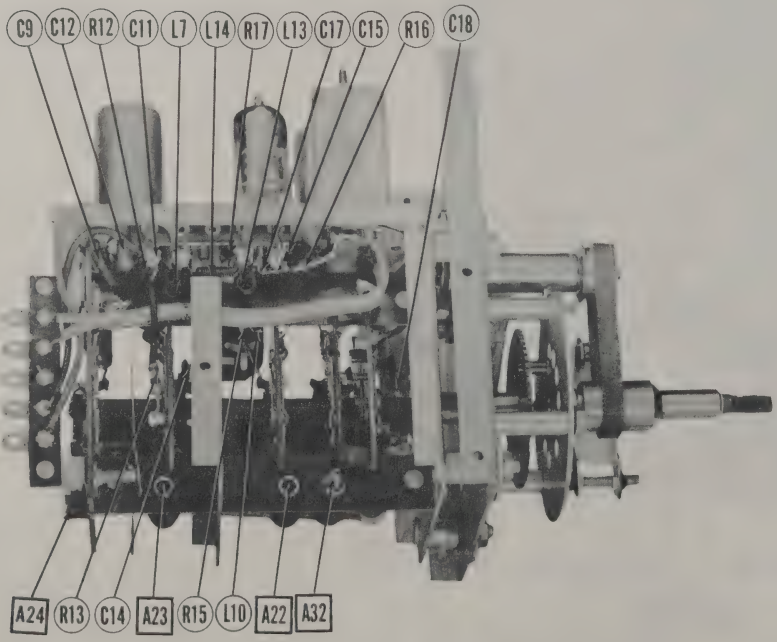
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	17KΩ	0Ω	0Ω	.1Ω	†4.7KΩ	†1.6KΩ	0Ω		
V 2	6AG5	100KΩ	0Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 3	6J6	†12KΩ	†12KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6BA6	47KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	150Ω		
V 5	6AG5	10KΩ	68Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	68Ω		
V 6	6BA6	6.8KΩ	0Ω	0Ω	.1Ω	†6.3KΩ	†2.4KΩ	47Ω		
V 7	6AG5	.1Ω	150Ω	.1Ω	0Ω	†9.3KΩ	†2.3KΩ	150Ω		
V 8	6AL5	1.4KΩ	3.9 Meg.	0Ω	.1Ω	700Ω	0Ω	7KΩ		
V 9	12AU7	†12KΩ	7KΩ	1.6KΩ	.1Ω	.1Ω	†14KΩ	5KΩ	6KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	82Ω		
V 11	6AU6	22KΩ	0Ω	0Ω	.1Ω	†2.3KΩ	†16KΩ	0Ω		
V 12	6AL5	0Ω	100KΩ	2.3Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 14	6K6GT	Inf.	0Ω	†3.6KΩ	†1.3KΩ	470KΩ	Inf.	.1Ω	2.7KΩ	
V 15	6SN7GT	1.4 Meg.	†370KΩ †2.9 Meg.	1.4KΩ	330KΩ 310KΩ	45KΩ	700Ω	.1Ω	0Ω	
V 16	6SN7GT	170KΩ	†30KΩ	330KΩ	17KΩ	†7200Ω	100KΩ	.1Ω	0Ω	
V 17	6SN7GT	1 Meg.	†15KΩ	0Ω	3.9 Meg.	†90Ω	7KΩ	.1Ω	0Ω	
V 18	6K6GT	0Ω	0Ω	†1.5KΩ	†1.5KΩ	2.2 Meg.	5.5KΩ 1.4KΩ	.1Ω	7KΩ 2.7KΩ	
V 19	6SN7GT	1.6 Meg.	†90KΩ	410KΩ	480KΩ	†100KΩ	1.4KΩ	.1Ω	0Ω	
V 20	6BG6G	Inf.	0Ω	1.5KΩ	Inf.	1 Meg.	1.5KΩ	.1Ω	†12KΩ	TOP CAP †140Ω
V 21	6W4GT	Inf.	Inf.	†40Ω	Inf.	†95Ω	Inf.	†40Ω	†40Ω	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †500Ω
V 23	5U4G	Inf.	5.5KΩ	Inf.	1.4KΩ	Inf.	1.4KΩ	Inf.	5.5KΩ	
V 24	16GP4	0Ω	1 Meg.	PIN 10 †90KΩ	PIN 11 120KΩ	PIN 12 .1Ω				

TV-PHONO SWITCH IN "TV" POSITION.
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 8 OF V23.

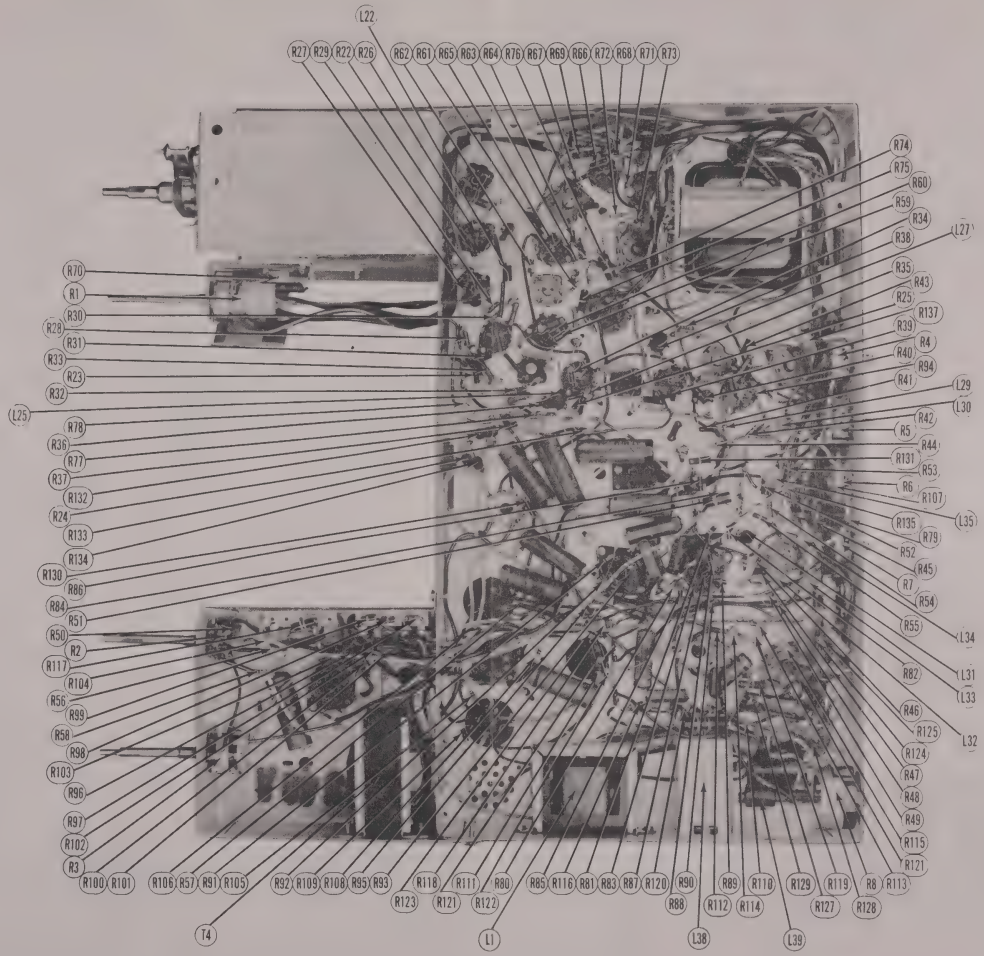
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



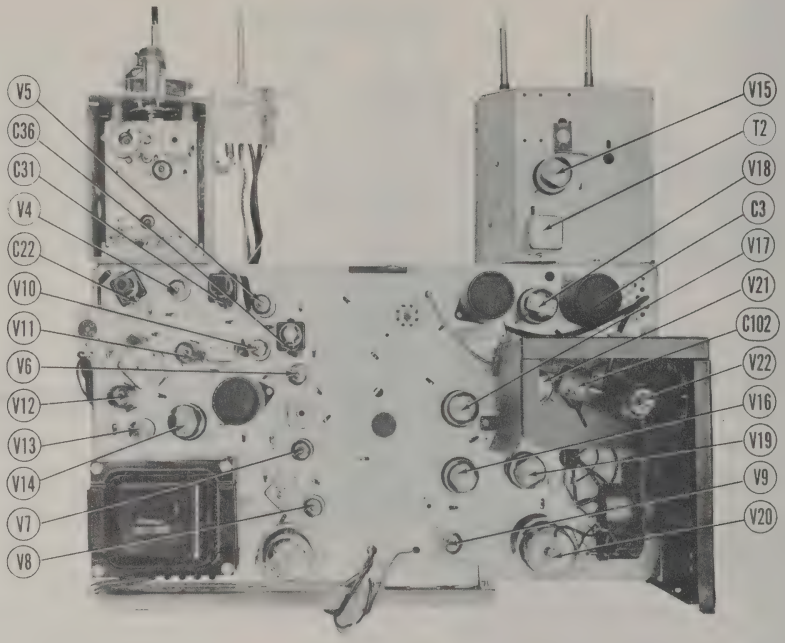
RF TUNER-RIGHT SIDE



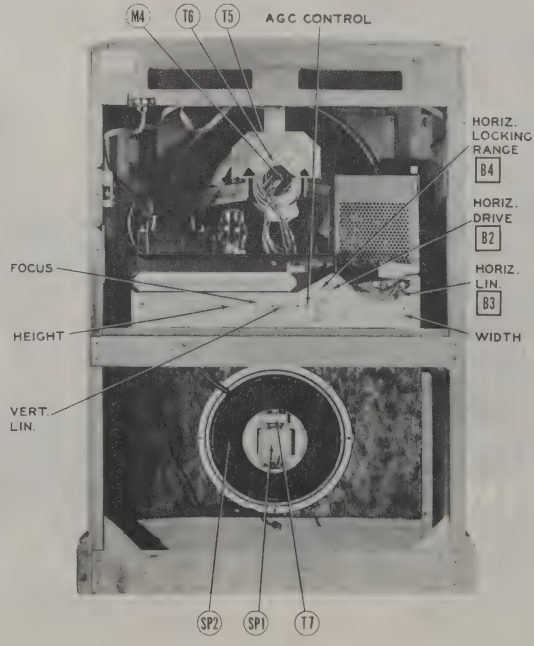
RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHASSIS-TOP VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK

Tune in a test pattern and turn the horizontal hold control fully counter-clockwise. The picture should remain in synchronization. Momentarily remove signal by switching to another channel and back to the original channel. The picture will usually remain in synchronization. If the picture did not remain in "sync", the number of blanking bars appearing on the screen will gradually reduce until only 2 bars are seen sloping downward to the left. A slight additional clockwise rotation of the hold control will pull the picture into "sync". The picture should remain in synchronization for approximately 180° additional rotation of the hold control.

Turn the hold control fully clockwise and the picture will be out of "sync" with one diagonal bar appearing. If the receiver does not function in this manner, a horizontal sweep circuit adjustment will be required.

HORIZONTAL FREQUENCY ADJUSTMENT

Connect a short between terminals C and D of L38.

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control fully clockwise and adjust the horizontal frequency slug (B1) until the blanking signal appears as a single vertical line in the raster.

Turn the hold control 1/4 turn counter-clockwise to sync the picture.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture. Adjust the width control until the picture is of proper width.

Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right. A slight readjustment of B2 may be necessary for optimum results. Turn the hold control maximum counter-clockwise and momentarily remove the signal by switching to another channel and back again. Turn the hold control slowly clockwise and note the least number of bars present just before the picture pulls into synchronization. Adjust the horizontal lock trimmer (B4) until 7 to 9 bars appear just before pull in.

HORIZONTAL WAVEFORM ADJUSTMENT

Remove the short from terminals C and D of L38.

Turn the horizontal hold control fully clockwise and adjust the horizontal waveform slug (B5) until the blanking signal appears.

Connect the low capacity probe of an oscilloscope to terminal C of L38 and chassis. Adjust B5 and B1 alternately until the broad and narrow peaks are of equal amplitude as shown in figure 6. If necessary during this adjustment turn the hold control to keep picture in "sync".

Turn the hold control fully counter-clockwise and momentarily remove signal. Adjust B4 until 2 bars are present just before pull in. Turn the horizontal hold control fully clockwise and adjust B1 until blanking bars appear as a single vertical line. Turn the hold control 1/4 turn counter-clockwise to synchronize picture.

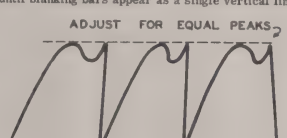


FIG. 6

AGC ADJUSTMENTS

SHOP ADJUSTMENT

Connect the vertical amplifier of an oscilloscope to pin 1 of 12AU7 (V9) and chassis.

Turn the set on and tune in a TV station.

Turn the contrast control fully clockwise and adjust the AGC threshold control for maximum response without clipping the sync pulses.

FIELD ADJUSTMENT

Tune in a TV station and sync the picture. Turn the contrast control fully clockwise and the brightness control counter-clockwise until the vertical retrace lines are just visible. Turn the AGC control fully clockwise. The top 1/2 inch of the picture may be bent slightly, which is normal. Turn the AGC control counter-clockwise until there is a change in the bend of the top 1/2 inch of the picture. Turn the AGC control clockwise to remove the bend. If there is a weak signal present turn the AGC control counter-clockwise until snow in the picture is more pronounced and then turn control clockwise for best signal to noise ratio.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push on type control knobs.
2. Remove ten wood screws from the rear cover. Remove rear cover.
3. Remove antenna leads from the antenna terminal strip.
4. Remove antenna terminal strip.
5. Remove jewel light located at bottom of cabinet.
6. Disconnect speaker.
7. Remove interlock switch.
8. Disconnect yoke socket.
9. Disconnect socket located at base of picture tube.
10. Remove six 3/8" hex head bolts holding chassis to cabinet. Remove chassis.
11. Remove four 5/16" hex nuts holding speaker in place. Remove speaker.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6BA6	6BA6	7BK	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6BA6	6BA6	7BK	
V7	4th Video IF	6AG5	6AG5	7BD	
V8	Video Det.-Sync. Limiter	6AL5	6AL5	6BT	
V9	Video Amp.	12AU7	12AU7	9A	
V10	1st Sound IF	6AU6	6AU6	7BK	
V11	2nd Sound IF	6AU6	6AU6	7BK	
V12	Discr.	6AL5	6AL5	7BD	
V13	A.F Amp.	6AV6	6AV6	7BT	
V14	Audio Output	6K8GT	6K8GT	7S	
V15	AGC Amp.-Vert. Osc. Disch.	6SN7GT	6SN7GT	8BD	
V16	AGC Rect. -1st Sync. Amp.	6SN7GT	6SN7GT	8BD	
V17	2nd Sync Amp. - Sync. Sep.	6SN7GT	6SN7GT	8BD	
V18	Vert Output	6K8GT	6K8GT	7S	
V19	Hor. AFC-Hor. Osc	6SN7GT	6SN7GT	8BD	
V20	Hor. Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	6CG	
V22	HV Rect.	1B3GT	1B3GT	2C	
V23	LV Rect.	5U4G	5U4G	5T	
V24	Picture Tube	16GP4	16GP4	12AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	73582	AFH82J16E		UPT445-820		TVL-3761	▪ Filter ■ Output Plate Dec.
B	10	450							▲ Filter
C	80	200							▲ Vert. Output Cath.
C1A	40	450	73583	AFH82J180D	1955	UPT445-9515		TVL-3708	▪ Filter ■ Filter ▲ Vert. Output Cath.
B	90	150							▲ Filter
C	50	150							
C1A	60	450	73581	AFH122J24D		UPT60145-315		TVL-4753	▪ Filter ■ Vert. Output Dec. ▲ Decoupling Output Cath. Byp.
C4A	40	450	71432	AFH82J		UPT44145		TVL-3785	▪ Filter
B	40	450							■ Filter
C	10	450							▲ Vert. Output Dec.
C5	5	450	28417	PRS450/4		BR445		TVA-1702	Decoupling
C6	8						NPOK-2		Fixed Trimmer
C7	18		54207		TCZ-18		NPOK-18		Fixed Trimmer
C9	270	1000	73090	1468-00025	D6-271	5WST25	GPZK-270	19C31	RF Coupling
C9	1500		71501	SI1500	D6-152		GP2L-0015	19C20	AGC Filter
C10	1500		71501	SI1500	D6-152		GP2L-0015	19C20	RF Screen Bypass
C11	1500		71501	SI1500	D6-152		GP2L-0015	19C20	RF Fil. Bypass
C12	1500		71501	SI1500	D6-152		GP2L-0015	19C20	RF Bypass
C13	1500		71501	SI1500	D6-152		GP2L-0015	19C20	RF Coupling
C14	5000		73473	BPD-005	DD-502		811-005	29C1	RF Coupling
C15	1500		71501	SI1500	D6-152		GP2L-0015	19C20	Mixer Decoupling
C16	1500		71501	SI1500	D6-152		GP2L-0015	19C20	Decoupling
C17	1501		71501	SI1500	D6-152		GP2L-0015	19C20	Mixer Fil. Byp.
C18	10		53511	SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Decoupling
C19	5		74035	SI5NPO	TCZ-4.7		NPOK-5		Osc. Feedback
C20	5		74035	SI5NPO	TCZ-4.7		NPOK-5		Osc. Feedback
C21	1500		71501	SI1500	D6-152		GP2L-0015	19C20	Osc. Fil. Bypass
C22	82				TCZ-82		NPOM-82		Fixed Trimmer
C23	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C24	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C25	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C26	.47	200	73787	P288-47		GT2P5		TM-5-2	AGC Filter
C27	.47	200	73787	P288-47		GT2P5		TM-5-2	AGC Filter
C28	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C29	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C30	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Fil.
C31	47				TCZ-47		NPOL-47	29C14	Fixed Trimmer
C32	270	1000	73091	1468-00025	D6-271	5WST25	GP2K-270	1FM-325	IF Coupling
C33	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C34	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Dec.
C35	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Fil.
C36	47				TCZ-47		NPOL-47	29C14	Fixed Trimmer
C37	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st S. IF Grd Filter
C38	33	1000	74105	SI33NPO	TCZ-33	5R5Q3	NPOL-33	29C13	IF Coupling
C39	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C40	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C41	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd V. IF Dec.
C42	270	1000	73091	1468-00025	D6-271	5WST25	GP2K-270	1FM-325	IF Coupling
C43	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C44	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Screen
C45	82		54062	SI82	TCZ-82	1W5T1	GP1K-82	29C11	4th V. IF Cath.
C46	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Plate Dec.
C47	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C48	75			SI75NPO	TCZ-75		NPOM-75		Fixed Trimmer
C49	270	1000	73091	1468-00025	D6-271	5WST25	GP2K-270	1FM-325	IF Coupling
C50	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C51	10	500	39504	1468-00001	D6-100	5WSQ1	GP1K-10	MS-41	V. Diode Filter
C52	.0015	600	73802	P688-0015	D6-152	PTE6D2	GP2L-0015	TM-22	1st V. Amp. Cath. *
C53	47				TCZ-47		NPOL-47	29C14	Fixed Trimmer
C54	270		73922		SI270	D6-271	5WST25	GP2K-270	19C31	Video Coupling
C55	120		73921		SI120	D6-121	5WST15	GP2K-120	19C29	Video Coupling
C56	.047	400	73553		P488-047	DF-503	PTE4S5	TM-15-4	Video Coupling
C57	.1	600	73557		P888-1	DF-104	PTE6P1	TM-1	Pic. Tube Cath. Byp.
C58	1500		71501		SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st S. IF Dec.
C59	1500		71501		SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st S. IF Cath.
C60	100		39396		SI100	D6-101	5WST1	GP1K-100	19C11	Limiter Grid Filter
C61	1500		71501		SI1500	D6-152	1W5D15	GP2L-0015	29C8	Limiter Screen

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C62	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Limiter Plate Dec.
C63	1500		71501	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Limiter Fil. Byp.
C64	270		73923		SI270	D6-271	5WST25	GP2K-270	19C31	RF Bypass
C65	270		73923		SI270	D6-271	5WST25	GP2K-270	19C31	Discr. Fil. Byp.
C66	.0022	600	73595		P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Audio Coupling
C67	.0022	600	73595		P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Tone Comp.
C68	.01	400	73561		P488-01	D6-103	PTE4S1	81L-01	TM-11-4	Audio Coupling
C69	.0047	600	73920		P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Tone Comp.
C70	470	500	39544		1468-0005	D6-471	5WS7S	GP2K-470	1FM-35	Tone Comp.
C71	.01	1000	73565		P1088-01	D6-103	PTE6S1	81L-01	TM-11-4	Audio Coupling
C72	.0022	600	73595		P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Output Plate Byp.
C73	.47	200	73787		P288-47		GT2P5		TM-5-2	AGC Filter
C74	.01	400	73561		P488-01	D8-103	PTE4S1	81L-01	TM-11-4	AGC Rect. Cath.
C75	.22	200	73794		P488-22		GT2P25		TM-2-2	1st Sync. Amp. Cath.
C76	.001	500	73801		P688-001	D6-102	PTE6D1	GP2L-001	TM-21	Sync. Coupling
C77	.047	600	73593		P688-047	DF-503	PTE6S5		TM-15	Sync. Coupling
C78	100	500	75084		1468-0001	D6-101	5WS7I	GP1K-100	1FM-31	Sync. Coupling
C79	.0022	600	73595		P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Integrator Net.
C80	.0047	600	73920		P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Integrator Net.
C81	.0047	600	73920		P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Integrator Net.
C82	.01	800	73594		P688-01	D6-103	PTE6S1	81L-01	TM-11	Vert. Osc. Grid
C83	.047	1000	73597		P1088-047		GT1655		TR-15	Vert. Discharge
C84	.22	600	74957		684-25	D8-103	GT6P25		TM-2	Vert. Sweep Coupling
C85	.022	400	73562		P488-022		PTE4S3		TM-12-4	Fixed Trimmer
C86	82	1000	73090							Hor. Sync. Coupling
C87	82	1000	73090							Hor. Feedback
C88	.047	400	73553		P488-047	D6-503	PTE4S5		TM-15-4	AFC Filter
C89	.022	400	73562		P488-022	DF-203	PTE4S2		TM-12-4	AFC Filter
C90	.47	200	73787		P288-47		GT2P5		TM-5-2	AFC Filter
C91	.047	600	73592		P688-047	DF-503	PTE6S5		TM-15	Hor. AFC Plate
C92	180	1000	73602							Hor. Osc. Grid
C93	.01	800	73594		P688-01		PTE6S1		TM-11	Fixed Trimmer
C94	1000	500	73801		1464-001	D6-102	1R5D1	GP2L-001	MS-21	Hor. Discharge
C95	560	500	74947		1468-0005	D6-561	5WS7S	GP2K-560	1FM-35	Hor. Sweep Coup.
C96	.047	1000	73597		P1088-047		GT1655		TR-15	Hor. Output Screen
C97	.22	400	74957		684-25		GT6P25		TM-2-4	Hor. Output Cath.
C98	.018	1000	74727		P1089-015		PTE1S15		MB-15	Damper Filter
C99	.022	1000	73810		P1088-022		PTE1S22		MB-12	Damper Filter
C100	.047	1000	73597		P1088-047		GT1655		TR-15	RF Bypass
C101	.047	1000	73597		P1088-047		GT1655		TR-15	Fixed Trimmer *
C102	500	20000	74947		HV20A	TV1-502				HV Filter
C103	.01	600	73565		P688-01	D6-103	PTE6S1	81L-01	TM-11	Line Filter
C104	.01	600	73565		P688-01	D6-103	PTE6S1	81L-01	TM-11	Line Filter

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	74048	Concentrikit Bi13-133 *	RTV-11	SBBT-507-8	Tone control-front
B	1 Meg.	½		Bi13-157X *			Volume control-rear-tapped at 200KΩ
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
D	Switch			76-1 *			Attach per instr. in " Concentrikit".
R2A	50KΩ	½	74047	Concentrikit Bi1-123 *	RTV-12	SBB-506	Brightness control-front-see note 1
B	10KΩ	½		Bi1-116 *			Contrast control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
R3A	1 Meg.	½	72734	Concentrikit Bi1-137 *	RTV-8	SBB-515	Vert. hold control-front
B	50KΩ	½		Bi1-153 *			Horiz. hold control-rear
C	Shaft End			E-187 *			Attach per instr. in "Concentrikit".
R4A	2.5 Meg.	½	71440	QII-239	AM-84-S	AN-83	Height control
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	AK-1	Attach to R4A per instructions
R5	1500Ω	2	74597		RTV-14	VK-129	Focus control-Wire Wound
R6A	5000Ω	½	71441	QII-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	AK-1	Attac to R6A per instructions
R7A	200KΩ	½	74473		AG-52-S	B-46	AGC control
B	Shaft		Not Reg.		FKS-1/4	Not Reg.	Attach to R7A per instructions
R8	250Ω	4	74945		RTV-50		Width control-Wire Wound

* Additional parts to be used with "Concentrikit".
Note 1. Chassis KC840B uses a dual control with channel light switch part #73452.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R9	390Ω	½		BTS-390	Antenna Loading-See Note 2
R10	10KΩ 20%	½			RF Amp. Grid
R11	150Ω 20%	½		BTS-150	AGC Network
R12	150Ω 20%	½		BTS-150	RF Amp. Screen
R13	2700Ω	½		BTS-2700	RF Amp. Plate
R14	120KΩ 20%	½			Series Test Point
R15	100KΩ 20%	½			Mixer Grid
R16	150Ω 20%	½		BTS-150	Mixer Decoupling
R17	1000Ω 20%	½		BTS-1000	Decoupling
R18	100KΩ 20%	½			Osc. Grid
R19	100KΩ 20%	½			Osc. Grid
R20	10KΩ 20%	½			Osc. Plate
R21	47Ω 20%	½			Osc. Cathode
R22	150Ω 20%	½		BTS-150	Decoupling
R23	1000Ω 20%	½		BTS-1000	AGC Network
R24	39KΩ 5%	½			AGC Network
R25	680Ω 5%	½			AGC Network
R26	150Ω 5%	½		BTS-150-5%	1st Video IF Amp. Cathode
R27	1000Ω 20%	½		BTS-1000	1st Video IF Amp. Decoupling
R28	150Ω 20%	½		BTS-150	Decoupling
R29	10KΩ 5%	½			2nd Video IF Amp. Grid
R30	68Ω	½			2nd Video IF Amp. Cathode
R31	1000Ω 20%	½		BTS-1000	2nd Video IF Amp. Decoupling
R32	470KΩ	½			1st Video IF Amp. Grid
R33	150Ω 20%	½		BTS-150	Decoupling
R34	47Ω 5%	½			3rd Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R35	3900Ω 5%	½		BTS-3900-5%	3rd Video IF Amp. Plate
R36	1000Ω 20%	½		BTS-1000	3rd Video IF Amp. Decoupling
R37	150Ω 20%	½		BTS-150	Decoupling
R38	150Ω	½		BTS-150	4th Video IF Cathode
R39	1000Ω 20%	½		BTS-1000	4th Video IF Screen
R40	8200Ω 5%	½			4th Video IF Plate
R41	1000Ω 20%	½		BTS-1000	4th Video IF Decoupling
R42	5600Ω 5%	½		BTS-5600-5%	Video Det. Diode Load
R43	10Ω 20%	½		BW-½-10	Bias Network
R44	680KΩ	½		BTS-680K	Video Amp. Grid
R45	220Ω	½		BTS-220	Video Amp. Cathode
R46	10KΩ	½		BTS-10K	Trap Coil Shunt
R47	3300Ω	½		BTS-3300	Video Amp. Plate
R48	150KΩ	½		BTS-150K	Video Peaking
R49	5100Ω 5%	½			Video Peaking
R50	680 20%	½		BW-½-68	Video Amp. Cathode
R51	12KΩ	2		BTB-12K	Voltage Divider
R53	300Ω	1		BTA-5800	Video Amp. Plate
R53	8200Ω 5%	½		BTA-8200-5%	Video Amp. Plate
R54	2.2 Meg.	½		BTS-2.2 Meg.	Voltage Divider
R55	2.2 Meg.	½		BTS-2.2 Meg.	Picture Tube Grid
R56	150KΩ	½		BTS-150K	Voltage Divider
R57	470KΩ	½		BTS-470K	Voltage Divider
R58	12KΩ	½		BTS-12K	Voltage Divider
R59	150Ω 5%	½		BTS-150-5%	1st Sound IF Amp. Cathode
R60	220Ω	½		BTS-220	1st Sound IF Amp. Cathode-See Note 2
R61	1200Ω	½		BTS-1200	1st Sound IF Amp. Decoupling
R62	22KΩ	½			2nd Sound IF Amp. Grid
R63	22KΩ 20%	½			2nd Sound IF Amp. Screen
R64	1000Ω 20%	½		BTS-1000	2nd Sound IF Amp. Plate Decoupling
R65	47KΩ 20%	½		BTS-47K	Voltage Divider
R66	100KΩ 5%	½		BTS-100K-5%	Disc. Diode Load
R67	100KΩ 5%	½		BTS-100K-5%	Disc. Diode Load
R68	22KΩ 20%	½		BTS-22K	De-emphasis
R69	5.1Ω	10	72087		Disc. Filament-Wire Wound
R70	100KΩ	½		BTS-100K	Tone Compensation
R71	10 Meg. 20%	½		BTS-10 Meg.	AF Amp. Grid
R72	330KΩ	½		BTS-330K	AF Amp. Plate
R73	470KΩ 20%	½		BTS-470K	Output Grid
R74	150Ω	2		BTS-150	Output Cathode
R75	1200Ω	1		BTA-1200	Output Cathode
R76	2700Ω	2		BTB-2700	Output Decoupling
R77	680KΩ	½		BTS-680K	AGC Network
R78	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R79	470KΩ	½		BTS-470K	Voltage Divider
R80	470KΩ	½		BTS-470K	Voltage Divider
R81	100KΩ	½		BTS-100K	AGC Rect. Cathode
R82	2700Ω	½		BTS-2700	AGC Rect. Cathode
R83	330KΩ	½		BTS-330K	Voltage Divider
R84	5600Ω	½		BTS-5600	Voltage Divider
R85	470Ω	½		BTS-470	AGC Rect. Plate
R86	1.2 Meg. 5%	½		BTS-1.2 Meg. 5%	Bias Network
R87	150KΩ 20%	½		BTS-150K	1st Sync. Amp. Grid
R88	270Ω	½		BTS-270	1st Sync. Amp. Plate
R89	10KΩ	½		BTS-10K	Isolation
R90	47KΩ	½		BTS-47K	Phase Shifting
R91	1 Meg.	½		BTS-1 Meg.	2nd Sync. Amp. Grid
R92	10 Meg.	½		BTS-10 Meg.	Voltage Divider
R93	15KΩ	½		BTA-15K	2nd Sync. Amp. Plate
R94	3.9 Meg.	½		BTS-3.9 Meg.	Sync. Sep. Grid
R95	6800Ω	½		BTS-6800	Sync. Sep. Cathode
R96	22KΩ	½		BTS-22K	Voltage Divider
R97	27KΩ	½		BTS-22K	Integrator Network
R98	8200Ω	½		BTS-8200	Integrator Network
R99	8200Ω	½		BTS-8200	Integrator Network
R100	1 Meg. 20%	½		BTS-1 Meg	Vert. Osc. Transformer Shunt-See Note 2
R101	3.3 Meg. 5%	½		BTS-3.3 Meg.-5%	Vert. Osc. Grid
R102	1.2 Meg. 5%	½		BTS-1.2 Meg.-5%	Vert. Osc. Grid
R103	270KΩ	½		BTS-270K	Vert. Osc. Plate
R104	12KΩ 5%	½		BTS-12K-5%	Vert. Peaking
R105	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Output Grid
R106	1500Ω	½		BTA-1500	Vert. Output Cath.
R107	150KΩ	½		BTS-150K	Vert. Linearity Control Shunt
R108	220KΩ	½		BTS-220K	Vert. Peaking
R109	1000Ω 20%	½		BTS-1000	Vert. Output Decoupling
R110	150KΩ	½		BTS-150K	Filter
R111	220KΩ	½		BTS-220K	Voltage Divider
R112	330KΩ	½		BTS-330K	Hor. AFC Cathode
R113	820KΩ	½		BTS-820K	Hor. AFC Grid
R114	82KΩ	½		BTA-82K	Hor. AFC Cathode
R115	330KΩ 5%	½		BTA-330K-5%	Hor. AFC Cathode
R116	3900Ω	½		BTS-3900	Hor. AFC Filter Network
R117	120KΩ	½		BTA-120K	Voltage Divider
R118	100KΩ	½		BTA-100K	Voltage Divider
R119	150KΩ 5%	½		BTA-150K-5%	Hor. Osc. Grid
R120	82000Ω 5%	½		BTS-8200-5%	Hor. Osc. Transformer Shunt
R121	82KΩ 5%	½		BTA-82K-5%	Hor. Osc. Plate
R122	150KΩ	½		BTS-150K	Hor. Feedback
R123	10KΩ	½		BTS-10K	Filter
R124	47Ω 20%	½			Parasitic Suppressor
R125	1 Meg.	½		BTS-1 Meg.	Hor. Output Grid
R126	200Ω	1		BW-2-100	Hor. Output Cathode
R127	12KΩ	1		BTA-12K	Hor. Output Screen
R128	2200Ω	1		BTA-1200	Width Control Shunt
R129	5600Ω	1		BTA-5600	Hor. Linearity Control Shunt
R130	1 Meg. 20%	½		BTS-1 Meg.	Isolation
R131	10Ω	½	18471	BW-½-10	Focus Coil Shunt-Wire Wound
R132	1800Ω	2		BTB-1800	Voltage Divider
R133	6800Ω	2		BTB-6800	Bleeder
R134	6800Ω	2		BTB-6800	Bleeder
R135	10Ω	½		BW-½-10	Bias Network
R136A	1200Ω	10	74955		Voltage Divider-Wire Wound
B	700Ω	5½			Bias Network-Wire Wound
C	700Ω	5½			Bias Network-Wire Wound
R137	100KΩ	2		BTB-100K	Line Filter

Note 2. Not used in all models.

RCA VICTOR MODELS T164, TC165, TC166, TC167, TC168, 6T72 (Ch. KCS40, A, B)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.1A	720VCT .250ADC	5VAC @ 3A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 9A	74949		P-3063	TP-360

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	164Ω	1400Ω	73569	A-8122	A-4000 ①	TBO-2 ①	Vert. Block Osc. Trans
T3	563Ω Tap @ 90Ω	0Ω	74951				Hor. Output Trans.
T4	465Ω	.4Ω	74950				Vert. Output Trans.
T5A	44Ω		74952				Hor. Deflection Coil
B	3.6Ω						Vert. Deflection Coil
T6	180Ω		74983				Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7A	13000Ω	4.6Ω	840Ω	.7Ω	75036 ② 75034 ③	A-3823	A-2901	RO-16 ①	① Drill one new mounting hole. ② Used in models TC165, TC166, TC167, TC168, 6T72. ③ Used in model T164 only.
B									

SPEAKER

ITEM No.	RATINGS FIELD RES.	V. C. IMP.	REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	4.6Ω	75035 ②	ST-102 ④ MOD. P12-S		② Used in models TC-165, TC-166, TC-167, TC-168, 6T72. ③ Used in model T164 only. ④ Replace output transformer to match 6-8Ω voice coil.
B	PM		75022 ③			
	CONE DIA.	V. C. DIA.				
SP2A	11 1/2"	1"				
B	7 1/2"					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250ADC	43Ω	1.3 Henries	73154	C-2326 ①	C-2991	Tk-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA RCA PART No.	MEISSNER PART No.	NOTES
L2	Ant. Trans.	0Ω	2Ω	73578		Complete with socket
L3	IF Trap	.5Ω		73476		Wound on 12MMF capacitor
L4	IF Trap	.5Ω		73476		Wound on 12MMF capacitor
L5	Ant. Shunt	.4Ω		73475		
L6	Ant. Coils	0Ω		73633		Complete with stator, rotor and C8
L7	Fil. Choke	0Ω		73477		
L8	RF Coil	0Ω		74110		Includes .4-4MMF trimmer
L9	RF Coils	0Ω		73471		Complete with stator, rotor, C13, C14 and R13.
L10	Coupling Coil	0Ω		73462		
L11	Mixer Grid	0Ω		74109		Includes two .4-4MMF trimmer
L12	Mixer Grid	0Ω		73470		Complete with stator and rotor
L13	Fil. Choke	0Ω		73477		
L14	Fil. Choke	0Ω		73477		
L15	Osc. Coil	0Ω		74108		Includes fine tuning trimmer
L16	Osc. Coils	0Ω		73468		Front section only. Complete with stator and rotor
L17	Osc. Coil	0Ω		73461		Rear section, channel 6
L18	Osc. Coils	0Ω		73469		Rear section only. Complete with stator and rotor
L19	Osc. Coil	0Ω		73874		Front section, channel 6
L20	Conv. Trans.	.4Ω	.1Ω	73448		
L21	1st Video IF	.1Ω	.4Ω	74589		
L22	Fil. Choke	0Ω		73477		
L23	2nd Video IF	.2Ω		74590		
L24	3rd Video IF -Sound Take Off	.2Ω	0Ω	74591		
L25	1F Grid Chk.	2.8Ω		74170		Wound on 8200Ω resistor, 36 microhenries
L26	4th Video IF	.1Ω	.1Ω	74592		
L27	Sound Trap	.1Ω	0Ω	71778		
L28	5th Video IF	.2Ω	.1Ω	73575		
L29	Peaking	6.6Ω		74214	19-1921	180 microhenries
L30	Peaking	4.5Ω		71527	19-1920	93 microhenries
L31	4.5MC Trap	1.8Ω		73577		
L32	Peaking	8Ω		71526	19-1922	250 microhenries
L33	Peaking	8Ω		71526	19-1922	250 microhenries
L34	Peaking	6.6Ω		74214	19-1921	180 microhenries
L35	Peaking	12Ω		75252	19-1923	500 microhenries
L36	Sound IF	.1Ω	.1Ω	71424		
L37	Disc. Trans.	.1Ω	.1Ω	71427		
L38	Horiz. Osc. Trans.	120Ω	35Ω	73576		
L39	Horiz. Lin.	35Ω		71449		

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.		NOTES
M1	Bayonet	7.5	.2	White	11765		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M2	RF Tuner		
M3	Fuse	73600	.25A 250V
M4	Ion Trap	74953	
M5	Switch	46760	TV-Phono
M6	Switch	74157	Cabinet Back Interlock
	Trimmer	74946	2 Section Horiz. Drive 10-160MMF, Horiz. Range 4-70MMF
	Safety Glass	74606	Models TC165, TC166, TC167, TC168, 6T72
	Safety Glass	74975	Model T164
	Knob	74960	Channel Selector (Dark)
	Knob	74961	Channel Selector (Tan)
	Knob	74959	Fine Tuning (Dark)
	Knob	73995	Fine Tuning (Tan)
	Knob	74962	Tone, Brightness, Vertical Hold (Dark)
	Knob	73999	Tone, Brightness, Vertical Hold (Tan)
	Knob	74963	Contrast, Volume, Horiz. Hold (Dark)
	Knob	74001	Contrast, Volume, Horiz. Hold (Tan)
	Escutcheon	73642	Channel Selector (Dark)
	Escutcheon	73740	Channel Selector (Tan)
	Knob	75461	Fine Tuning Beige Model 6T72
	Knob	75462	Channel Selector Beige Model 6T72
	Knob	75463	Tone, Brightness, Vert. Hold Beige Model 6T72
	Knob	75464	Contrast, Volume, Horiz. Hold Beige Model 6T72

CRITICAL LEAD DRESS

1. The ground bus from pin 2 and the center shield of V11 socket should not be shortened or rerouted.
2. Do not change the dress of the filament leads or the by-pass capacitors in the picture or sound IF circuits. The filament leads between V11, V12 and V13 should be down against the chassis and away from grid or plate leads.
3. If it is necessary to replace any of the 1500MMF capacitors in the picture IF circuit, the lead length must be kept as short as possible.
4. Picture IF coupling capacitors C32, C38, C42 and C49 should be up and away from the chassis and should be clear of the pix IF transformer adjustments by at least 1/4 inch. If the dress of any of these capacitors is changed, the IF alignment should be rechecked.
5. Dress black lead from terminal C of L28 down next to chassis.
6. Leads to L30 and L29 must be as short as possible.
7. Dress peaking coils L34, L33, L35 and L32 up and away from the chassis.
8. Dress C64 across tube pins 5 and 6 with leads not exceeding 3/8 inch.
9. Dress body of R68 as close to tube pin as possible.
10. Dress C55 and C56 up and away from the chassis.
11. Dress the yellow lead from the picture control away from the chassis and away from the volume-control leads. Dress the yellow lead from pin 8 of V9 away from the chassis.
12. Dress the green lead from pin 2 of V9 away from the chassis.
13. Dress R114, R119 and R115 up and away from the chassis.
14. The leads to the volume control should be dressed down against the chassis and away from V11 and V12.
15. Contact between the RF oscillator frequency adjustment screws and the oscillator coils or channel switch eyelets must be avoided.
16. Dress three AC leads to R1B under clamp and away from R70.
17. Dress black lead from power transformer and red lead from interlock to terminal board, on top side of four potentiometers.
18. Dress all leads from V23 to V14 on power transformer side of terminal board.
19. All solder joints in the high voltage section should be free of sharp edges.
20. The lead side of the V22 plate cap should be turned away from the fixed high voltage shield and the lead should be dressed away from all objects.
21. All leads under the horizontal plate in the high voltage section should be kept reasonably short and dressed away from the V22 corona ring.
22. The red-black lead from terminal 2 of the deflection yoke should be dressed around the green and yellow leads and away from the red lead. The loose end of the red-black wire should be heavily taped.

SILVERTONE MODEL 210 (Ch. 132.880)
(BATTERY OPERATED)

SILVERTONE MODEL 210 (Ch. 132.880)
(BATTERY OPERATED)

SILVERTONE MODEL 210

TRADE NAME	Silvertone, Model 210 (Ch. 132.880)
SUPPLIER	Sears Roebuck and Co., 925 So. Homan St., Chicago, Illinois
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1U5 DET-AVC-AF, 3S4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	250MA at 1.5 Volts DC and 14MA at 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	DET-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	10	150	N21811	PRS150/12		BR1015		TVA-1406	RF Bypass
C2	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	50	500		1468-00005	D6-500	5W5Q5	GP1K-50	1FM-45	Osc. Grid Cap.
C4	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	RF Bypass
C5	50	500		1468-00005	D6-500	5W5Q5	GP1K-50	1FM-45	Diode RF Filter
C6	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C7	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	AF Amp. Screen
C8	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	AF Amp. Plate
C9	.006	600		P688-006	D6-562	PTE6D6	811-005	6TM-D6	Audio Coupling
C10	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Output Plate Byp.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg.	½	N23138	Q13-139	AG-66-Z	B-76-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½		BTS-100K	Osc. Grid
R3	2.2 Meg.	½		BTS-2.2 Meg.	AVC Network
R4	10 Meg.	½		BTS-10 Meg.	AF Grid
R5	4.7 Meg.	½		BTS-4.7 Meg.	AF Screen
R6	1 Meg.	½		BTS-1 Meg.	AF Plate
R7	2.2 Meg.	½		BTS-2.2 Meg.	Output Grid
R8	390Ω	½		BTS-390	Bias Net.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T1	7500Ω	3.5Ω	230Ω	.4Ω	N23140	A-3329 ②	A-2927 ②		② Bend mounting tabs down.

CHASSIS—TOP VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113 ①		
SP1	PM	3.5Ω	N22972	MOD. P4-X	4A07 ①	① Drill one new mounting hole in speaker lip.
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No.
L1	Loop Ant.	3.3Ω		N23141	
L2	Osc. Coil	2.2Ω	8.2Ω	N23139	14-1074
L3	1st IF	22Ω	20Ω	N21797-2	16-6668
L4	2nd IF	22Ω	20Ω	N21797-1	16-6669

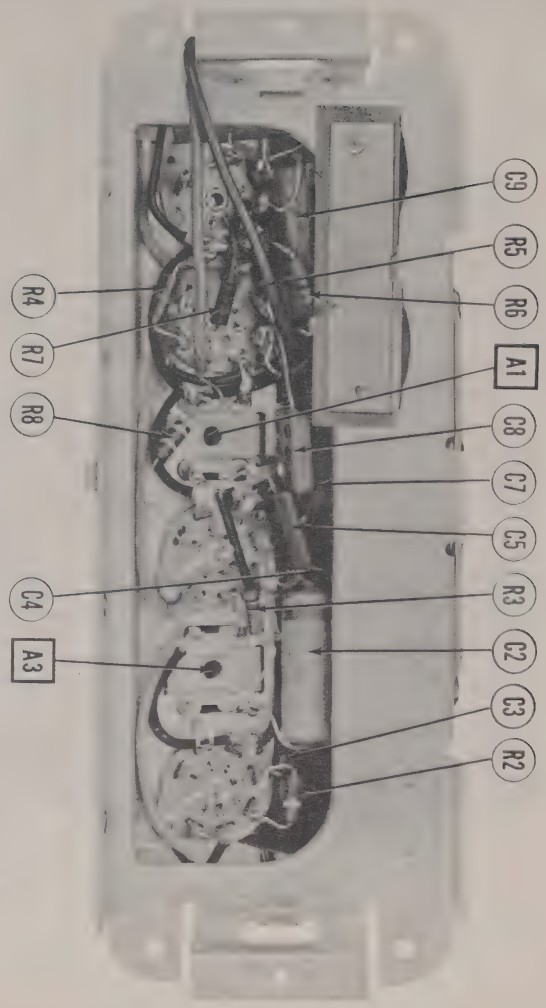
BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	1.5V "A"	4650	950			2R			2 required
M2	67.5V "B"	6480		467			XX45		

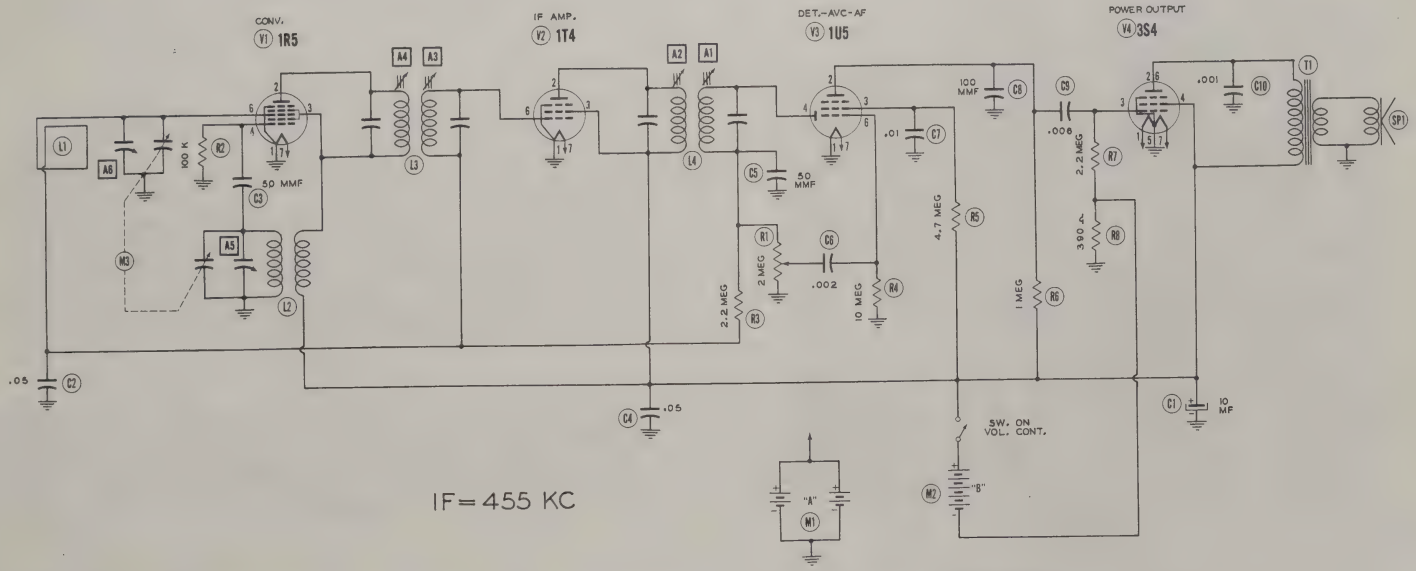
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	2 Gang Var. Cap.	N22966	(25-400MMF, 24-167MMF)
	Cabinet	N23179	
	Knob	N23181	Tuning
	Knob	N23182	Off-Volume

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 210



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V.	60VDC	60VDC	8-18VDC	0V.	-.1VDC	1.4VDC
V 2	1T4	0V.	60VDC	60VDC	0V.	0V.	-.1VDC	1.4VDC
V 3	1U5	0V.	9.4VDC	3VDC	-.3VDC	-.1VDC	0V.	1.4VDC
V 4	3S4	1.4VDC	56VDC	0V.	60VDC	0V.	56VDC	1.4VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†22Ω	†2.2Ω	100KΩ	*	4.2 Meg.	*
V 2	1T4	0Ω	†22Ω	†0Ω	Inf.	*	4.2 Meg.	*
V 3	1U5	0Ω	†1 Meg.	†4.7 Meg.	2 Meg.	390Ω	10 Meg.	*
V 4	3S4	*	†230Ω	2.2 Meg.	†0V.	0V.	†230Ω	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM PIN 4 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

SONORA
MODEL 171

SONORA
MODEL 171

SONORA MODEL 171

TRADE NAME	Sonora, Model 171
MANUFACTURER	Sonora Radio and Tel. Corp., 325 No. Hoyne Ave., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES(FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer carriage against dial cord pulley at low frequency end of dial. Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 8 (Grid) of 12SA7 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A5	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	N7550	PRS150/50-		EDL5315		TVA-2450	Filter-Red
B	30	150		30					Filter-Yellow
C2	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	220	500	N-6468	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	Diode RF Filter
C4	100	500	N-7548	1469-0001	TCZ-100	5R5T1	NPOM-100	MS-31	Fixed Trimmer
C5	5000		N-4884	SI5000	D6-502	PTE6D5	811-005	29C1	Audio Coupling
C6	470	500	N-4660	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	AF Amp. Plate
C7	.01	400	N-1344	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C8	.01	400	N-1344	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Output Plate Bypass
C9	.2	400	N-5160	P488-22		GT4P2		72P53	Line Isolation
C10	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	Rect. Plate Byp.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-6693	Q13-133	AG-60-Z	BSK-60-S	Volume control-See note 1
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

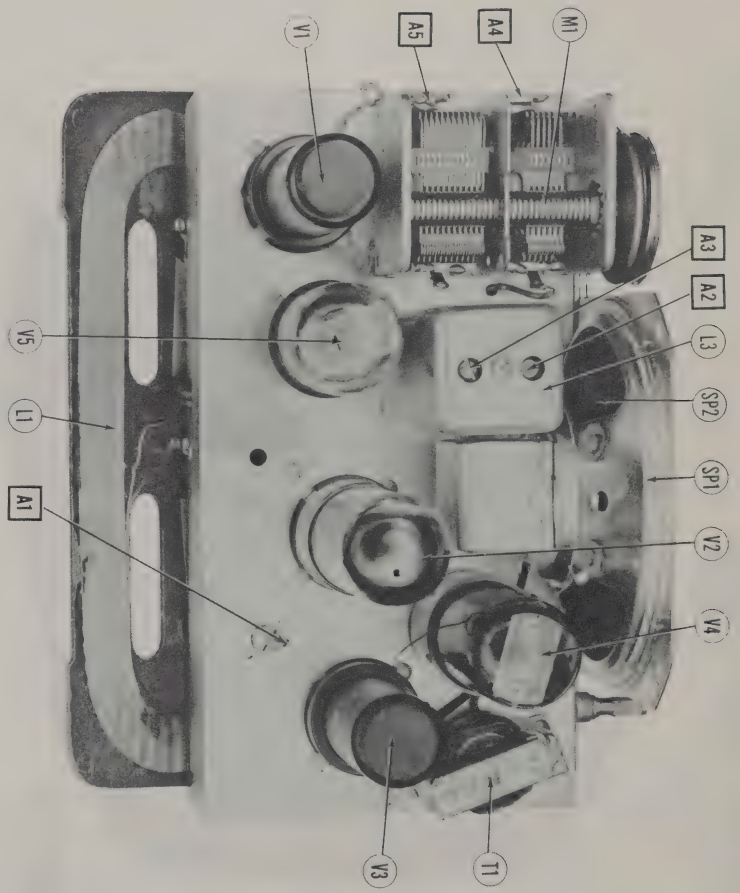
Note 1. Install a 50KΩ resistor in series with the right hand terminal of the control and the lead connecting to this terminal of the original control. (Control viewed from shaft end, terminals down.)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	N-4025	BTS-22K	Osc. Grid
R3	1 Meg.	½	N-1203	BTS-1 Meg.	AVC Network
R4	6.8 Meg.	½	N-4028	BTS-6.8 Meg.	AF Grid
R5	180KΩ	½		BTS-180K	AF Plate-See Note 2
R6	470KΩ	½	N-4027	BTS-470K	Output Grid
R7	220Ω	½	N-4024	BTS-220	Output Cathode
R8	1200Ω	1	N-4900	BTS-1200	Filter
R9	220KΩ	1	N-4026	BTS-220K	Isolation

Note 2. Some models use 220KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3300Ω	3.6Ω	250Ω	.6Ω	N-7548	A-3332	A-3025		

SPEAKER

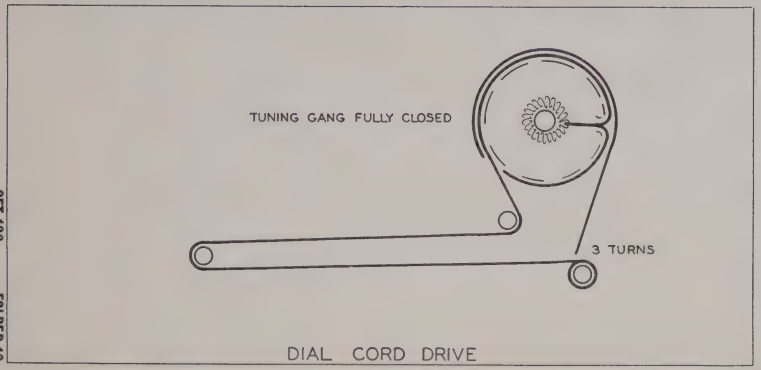
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113		
SP1	PM	3.6Ω	N-4318	MOD. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

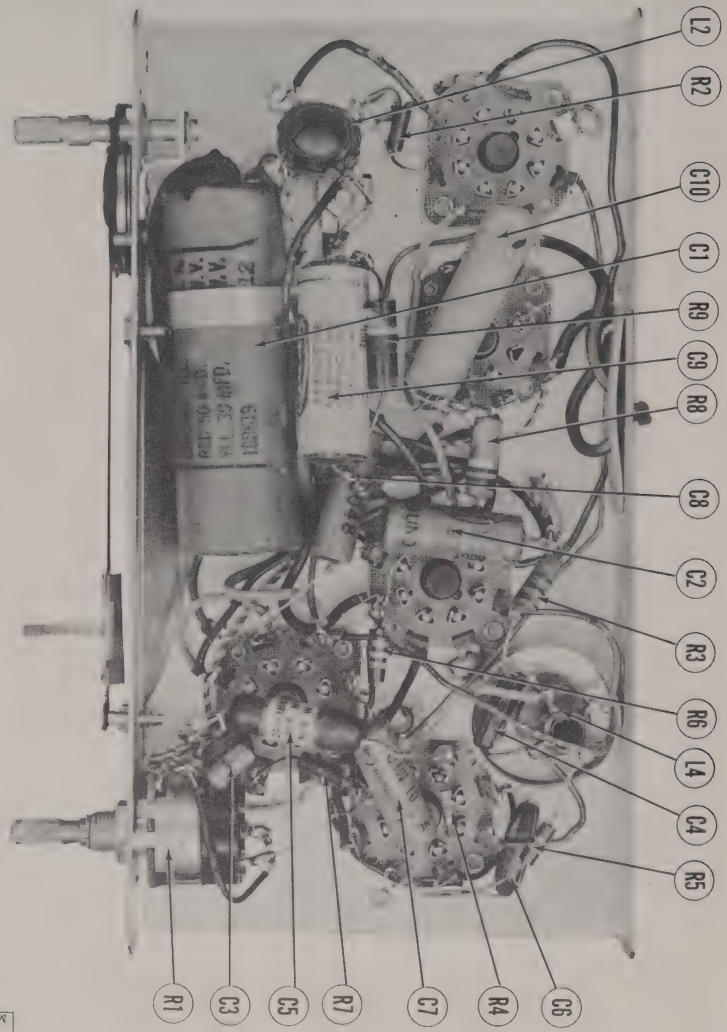
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.4Ω		N-7540		
L2	Osc. Coil	.7Ω	7.8Ω	N-7139	14-1073	
L3	1st IF	20Ω	20Ω	N-7541	16-6658	
L4	2nd IF	22Ω	22Ω	N-7542		

MISCELLANEOUS

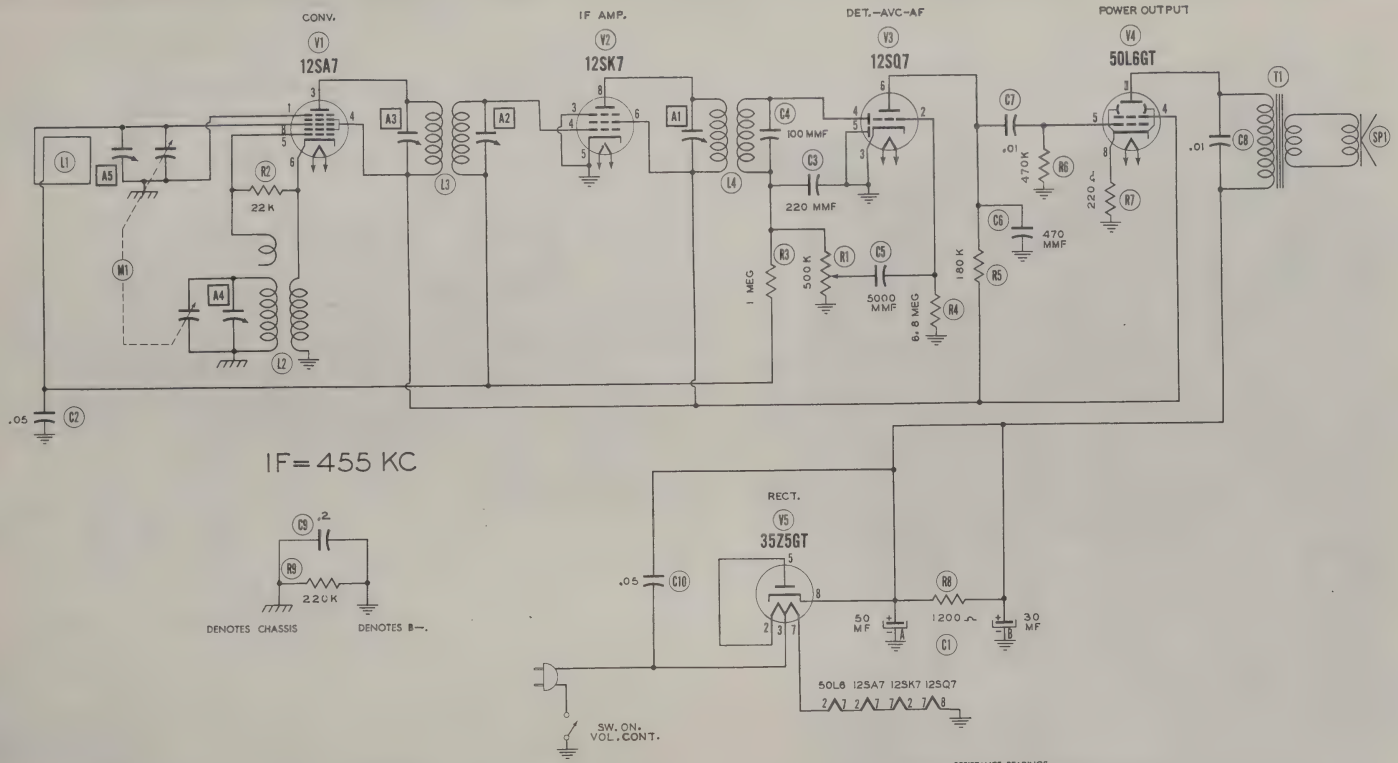
ITEM No.	PART NAME	SONORA PART No.	NOTES
M1	2 Gang Var. Cap.	N-7543	(25-391MMF, 18-155MMF)



CHASSIS—BOTTOM VIEW



SONORA MODEL 171



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V.	36VAC	85VDC	85VDC	8-10VDC	0V.	25VAC	-.4VDC
V 2	12SK7GT	0V.	12VAC	0V.	-.4VDC	0V.	85VDC	25VAC	85VDC
V 3	12SQ7	0V.	-.6VDC	0V.	-.2VDC	0V.	55VDC	12VAC	0V.
V 4	50L6GT	0V.	87VAC	110VDC	85VDC	0V.	-.2VDC	36VAC	6VDC
V 5	35Z5GT	0V.	110VAC	117VAC	0V.	110VAC	0V.	87VAC	120VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	38Ω	†1.2KΩ	†1.2KΩ	22KΩ	.7Ω	25Ω	1.5 Meg.
V 2	12SK7GT	220KΩ	13Ω	0Ω	1.5 Meg.	0Ω	†1.2KΩ	25Ω	†1.2KΩ
V 3	12SQ7	220KΩ	6.8 Meg.	0Ω	500KΩ	0Ω	†180KΩ	13Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†250Ω	†1.2KΩ	470KΩ	500KΩ	38Ω	220Ω
V 5	35Z5GT	Inf.	122Ω	112Ω	Inf.	122Ω	0Ω	90Ω	90KΩ

† MEASURED FROM PIN 8 OF V5.

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109-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

TELE-TONE MODEL

TV-308 (CH. TAC)

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TELE-TONE MODEL

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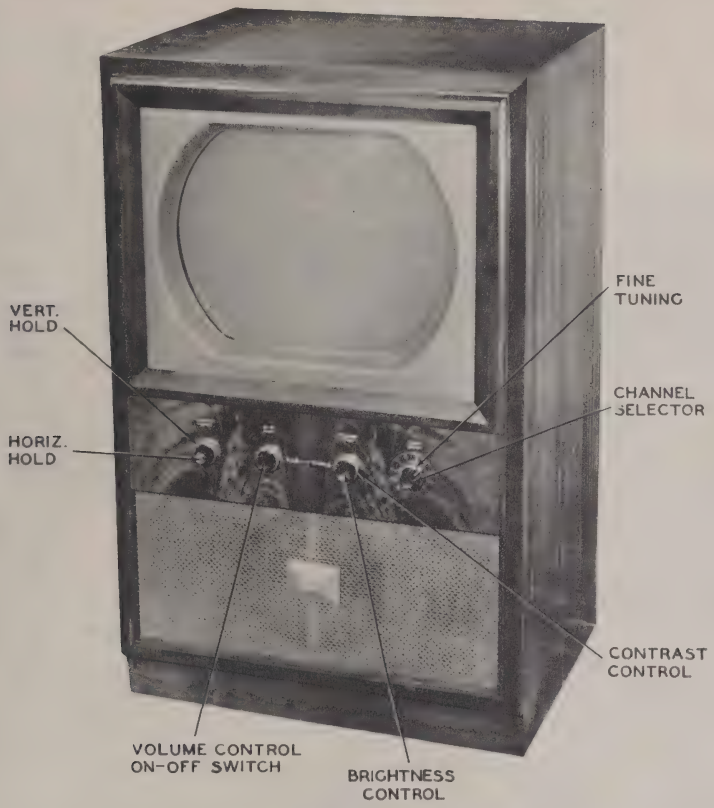

TELE-TONE MODEL
TV-308 (Ch. TAC)

TRADE NAME	Tele-Tone, Model TV-308 (Chassis "TAC")
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58th St., New York, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110 - 120 Volts AC - 60 Cycle
RATING	2.1 Amp. at 117 Volts AC
TUNING RANGE-	Channels 2 thru 13

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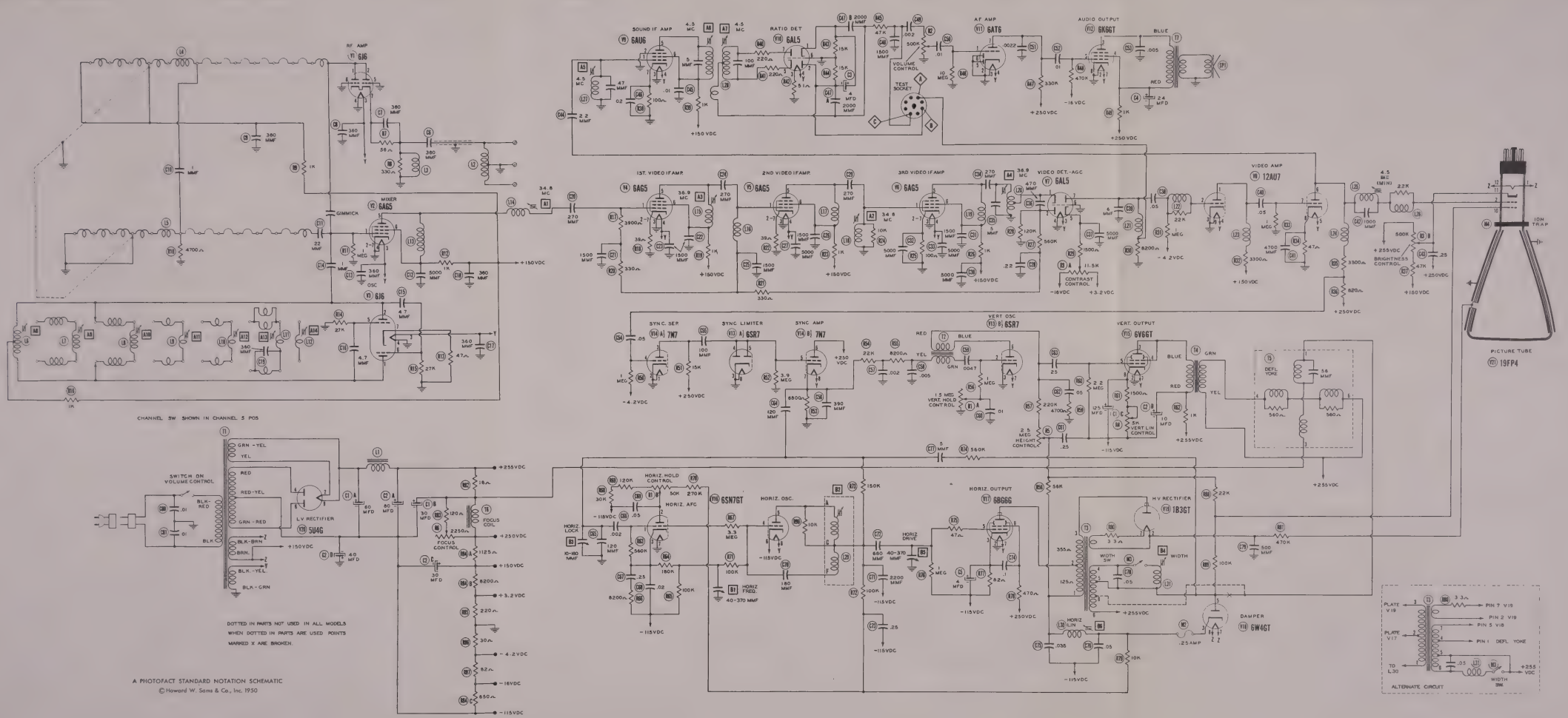
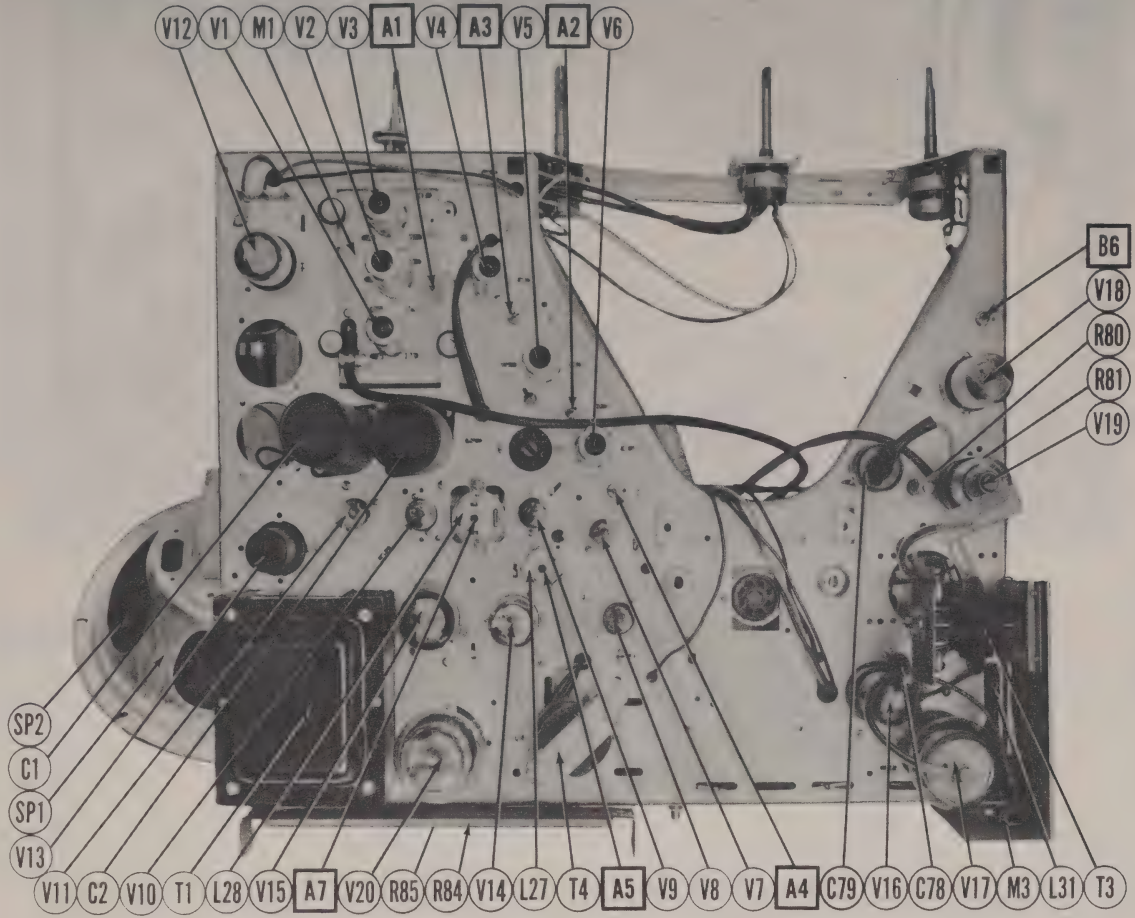
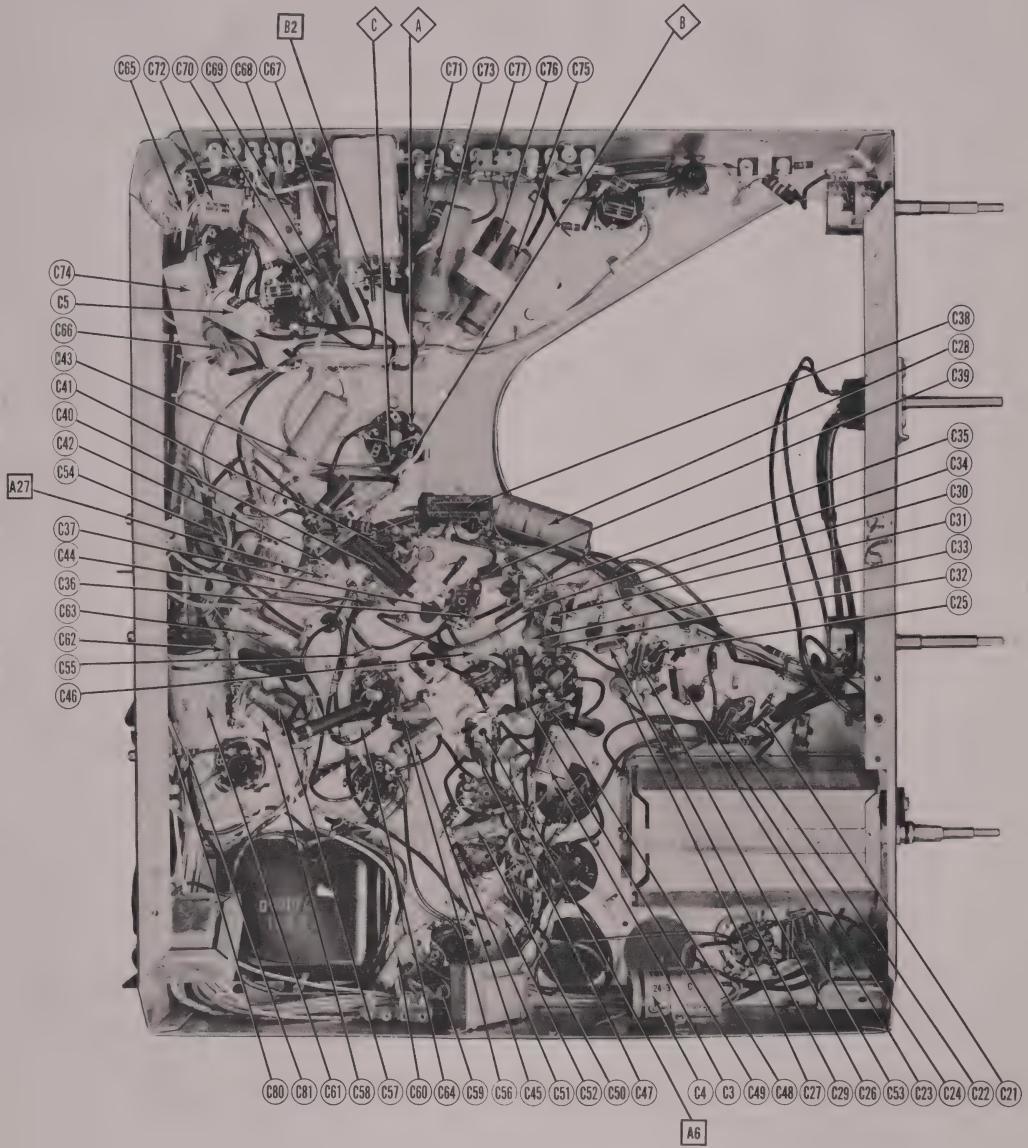


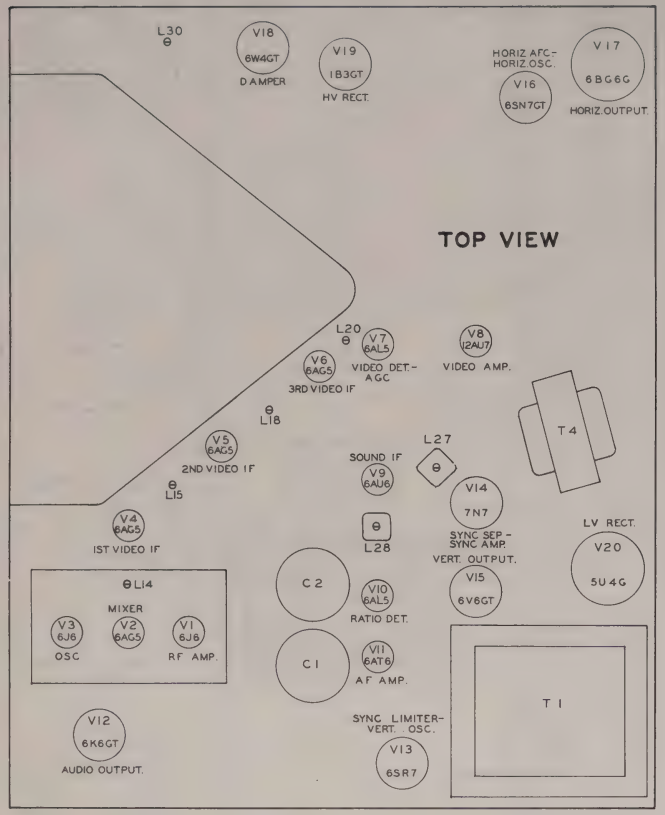
TELE-TONE MODEL
TV-308 (Ch. TAC)

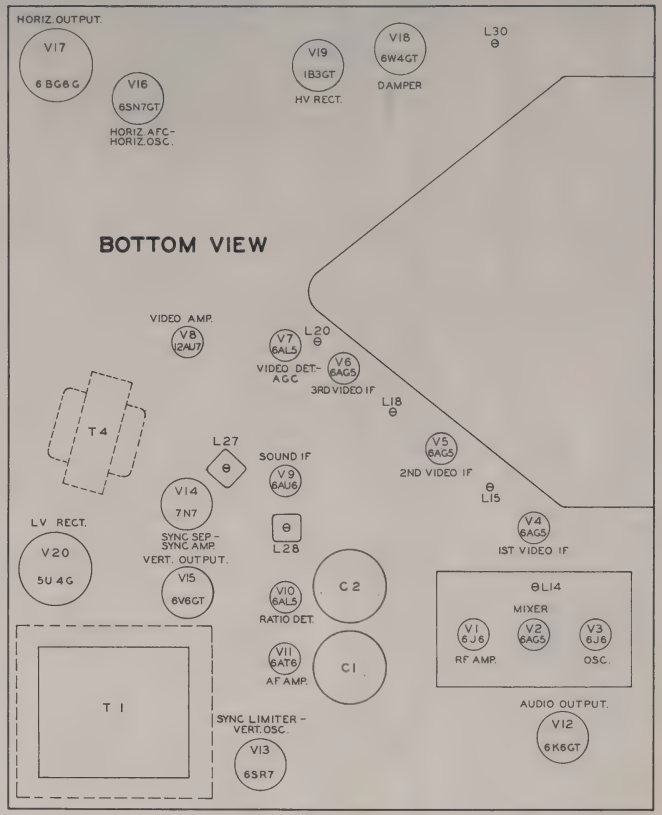


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

TELE-TONE
MODEL TV-308 (Ch. TAC)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with picture tube removed, the end of the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) to prevent erroneous indications.
Set contrast control to indicate a minus 2 volts on pin 7 of V7.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	34.8MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum reading of minus 1.5 volts.
2.	Direct	"	36.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	34.8MC (10MC SWP)	32.8MC 34.8MC 36.9MC 37.3MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.	4.5MC (Unmod)	Any channel not used locally	DC Probe to Point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (C). Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any channel not used locally	Vert. Amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A7	Reconnect capacitor C3. Adjust A7 so 4.5MC marker occurs at center of cross-over lines as per figure 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT (7 COIL TUNER)

Replace the local oscillator tube (V3).
Set the fine tuning control to the mid-position of its range.
The RF and Mixer portions of this receiver are pre-set at the factory and should not require adjustment in the field.
The seven oscillator coils are so arranged that channels 3 thru 13 are paired with one variable and two fixed coils, that is, channels 3 and 4, 5 and 6, etc., which have sufficient hand width to cover two channels. Adjust each oscillator coil to channel that is available in the area that receiver is to be serviced.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to ungrounded antenna terminal. Low side to chassis.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to Point (A). Low side to chassis.	A8	Adjust to place sound marker as shown in figure 4. The video marker should be at 50%.
			63MC (10MC SWP) 69MC (10MC SWP)	61.25MC 65.75MC 67.25MC 71.75MC	3 or 4		A9	
			79MC (10MC SWP) 85MC (10MC SWP)	77.25MC 81.75MC 83.25MC 87.75MC	5 or 6		A10	
			177MC (10MC SWP) 183MC (10MC SWP)	175.25MC 179.75MC 181.25MC 185.75MC	7 or 8		A11	
			189MC (10MC SWP) 195MC (10MC SWP)	187.25MC 191.75MC 193.25MC 197.75MC	9 or 10		A12	
			201MC (10MC SWP) 207MC (10MC SWP)	199.25MC 203.75MC 205.25MC 209.75MC	11 or 12		A13	
			213MC (10MC SWP)	211.25MC 215.75MC	13		A14	

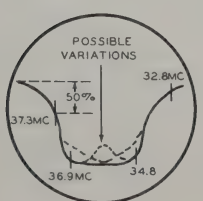


FIG. 1

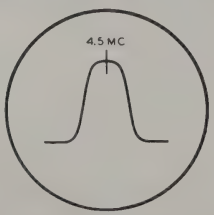


FIG. 2

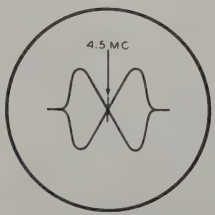


FIG. 3

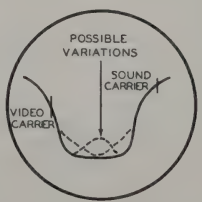


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

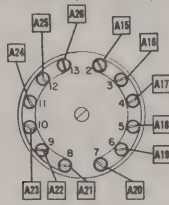
OSCILLATOR ALIGNMENT (12 COIL TUNER)

Replace the local oscillator tube (V3).
Set the fine tuning control to the mid-position of its range.
The RF and mixer portions of this receiver are pre-set at the factory and should not require adjustment in the field.

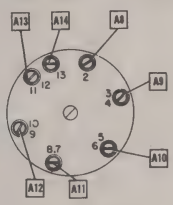
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded antenna terminal. Low side to chassis.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to Point (A) Low side to chassis.	A15	Adjust to place sound marker as shown in figure 4. The video marker should be at 50%.
			63MC (10MC SWP)	61.25MC 65.75MC	3		A16	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A19	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A20	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A21	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A22	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A23	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A24	
			207MC (10MC SWP)	205.25MC 209.75MC	12		A25	
			213MC (10MC SWP)	211.25MC 215.75MC	13		A26	

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.	4.5MC (400∿ Mod.)	Not used	Any	Vert. Amp. to pin 2 (Grid) of picture tube. Low side to chassis.	A27	Adjust for minimum 400∿ indication on scope. After alignment is complete, tune in test pattern and adjust A27 for maximum vertical wedge definition.

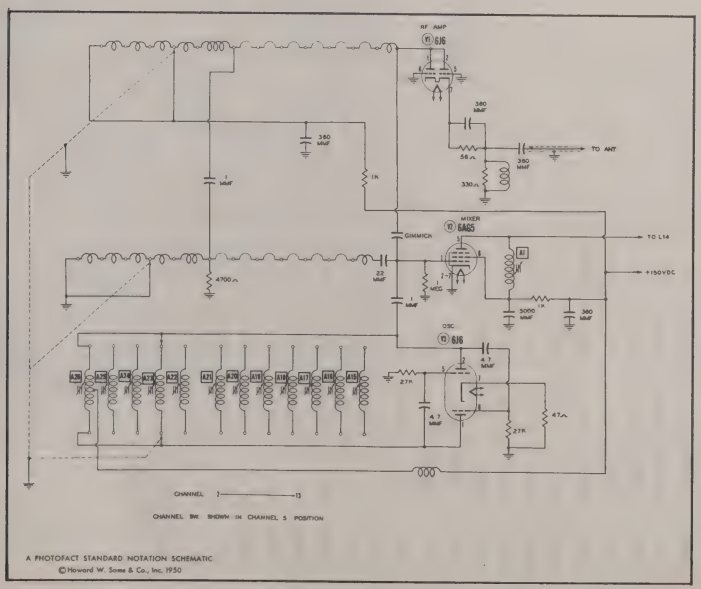


12 CHANNEL TUNER



7 CHANNEL TUNER

OSCILLATOR ALIGNMENT POINTS



ALTERNATE 12 CHANNEL TUNER

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	130VDC	130VDC	6.3VAC	0V.	0V:	0V.	1.2VDC		
V 2	6AG5	-5.4VDC	0V.	6.3VAC	0V.	145VDC	145VDC	0V.		
V 3	6J6	115VDC	115VDC	6.3VAC	0V.	§-2.5VDC	§-3.8VDC	.5VDC		
V 4	6AG5	-4VDC	0V.	0V.	6.3VAC	150VDC	150VDC	0V.		
V 5	6AG5	-4VDC	0V.	0V.	6.3VAC	150VDC	150VDC	0V.		
V 6	6AG5	0V.	1VDC	0V.	6.3VAC	140VDC	140VDC	1VDC		
V 7	6AL5	0V.	-16VDC	6.3VAC	0V.	-3.2VDC	0V.	-.5VDC		
V 8	12AU7	135VDC	-.8VDC	0V.	6.3VAC	6.3VAC	170VDC	0V.	.9VDC	0V.
V 9	6AU6	0V.	0V.	0V.	6.3VAC	140VDC	140VDC	1.2VDC		
V 10	6AL5	.1VDC	-.1VDC	1.3VAC	6.3VAC	-.1VDC	0V.	-.1VDC		
V 11	6AT6	-.5VDC	0V.	0V.	6.3VAC	0V.	0V.	70VDC		
V 12	6K6GT	250VDC	0V.	215VDC	225VDC	-12VDC	-16VDC	6.3VAC	0V.	
V 13	6SR7	0V.	-30VDC	0V.	-.7VDC	-.7VDC	320VDC 125VDC	6.3VAC	0V.	
V 14	7N7	0V.	0V.	165VDC	-.8VDC	-.7VDC	250VDC	9VDC	6.3VAC	
V 15	6V6GT	0V.	0V.	*	*	-90VDC	0V.	6.3VAC	-70VDC -85VDC	
V 16	6SN7GT	-100VDC	27VDC	-115VDC	-170VDC	80VDC	-115VDC	0V.	6.3VAC	
V 17	6BG6G	0V.	0V.	-105VDC	0V.	-120VDC	0V.	6.3VAC	240VDC	TOP CAP *
V 18	6W4GT	340VDC	0V.	420VDC	0V.	260VDC	0V.	¶	¶	
V 19	1B3GT	* DO NOT MEASURE.								
V 20	5U4G	0V.	260VDC	0V.	370VAC	0V.	370VAC	0V.	260VDC	
V 21	19FP4	¶	170VDC	PIN 10 340VDC	PIN 11 260VDC	PIN 12 ¶				

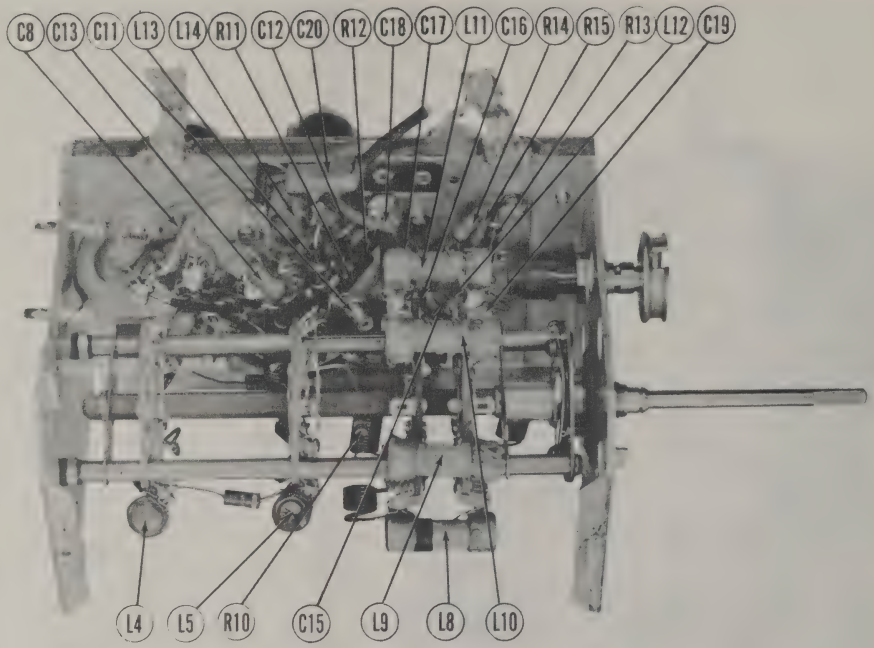
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

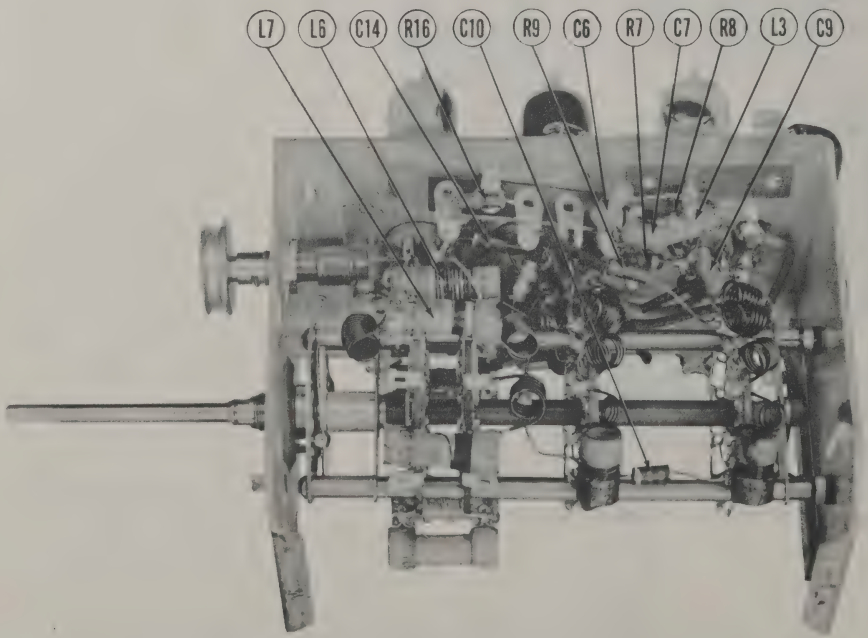
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†2.2KΩ	†2.2KΩ	.1Ω	0Ω	0Ω	0Ω	59Ω		
V 2	6AG5	1 Meg.	0Ω	.1Ω	0Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 3	6J6	†2.2KΩ	†2.2KΩ	.1Ω	0Ω	27KΩ	27KΩ	47Ω		
V 4	6AG5	685KΩ	39Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	39Ω		
V 5	6AG5	680KΩ	39Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	39Ω		
V 6	6AG5	.1Ω	100Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	100Ω		
V 7	6AL5	0Ω	120KΩ	.1Ω	0Ω	1.6KΩ	0Ω	8.2KΩ		
V 8	12AU7	†4.5KΩ	1 Meg.	0Ω	.1Ω	.1Ω	†4.1KΩ	1 Meg.	47Ω	0Ω
V 9	6AU6	1Ω	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	100Ω		
V 10	6AL5	15KΩ	15KΩ	2Ω	.1Ω	Inf.	0Ω	Inf.		
V 11	6AT6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 12	6K6GT	†45Ω	0Ω	†1.4KΩ	†1000Ω	470KΩ	115Ω	.1Ω	0Ω	
V 13	6SR7	0Ω	2.5 Meg.	0Ω	3.9 Meg.	3.9 Meg.	#275KΩ #2.8 Meg.	.1Ω	0Ω	
V 14	7N7	0Ω	0Ω	†15KΩ	1 Meg.	3.9 Meg.	†45Ω	6.8KΩ	.1Ω	
V 15	6V6GT	Inf.	0Ω	†2.1KΩ	†2.1KΩ	2.2 Meg.	Inf.	.1Ω	7.3KΩ 2.3KΩ	
V 16	6SN7GT	800KΩ	#170KΩ	280KΩ	200KΩ	#110KΩ	765Ω	0Ω	.1Ω	
V 17	6BG6G	Inf.	0Ω	860Ω	Inf.	1 Meg.	Inf.	.1Ω	†515Ω	TOP CAP #160Ω
V 18	6W4GT	†100KΩ	Inf.	130KΩ	Inf.	†45Ω	Inf.	8.4KΩ	8.4KΩ	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #510Ω
V 20	5U4G	Inf.	10KΩ	Inf.	800Ω	Inf.	800Ω	Inf.	10KΩ	
V 21	19FP4	8.4KΩ	†4.1KΩ	PIN 10 †100KΩ	PIN 11 †60Ω	PIN 12 8.4KΩ				

† MEASURED FROM PIN 8 OF V20.
# MEASURED FROM PIN 3 OF V18.

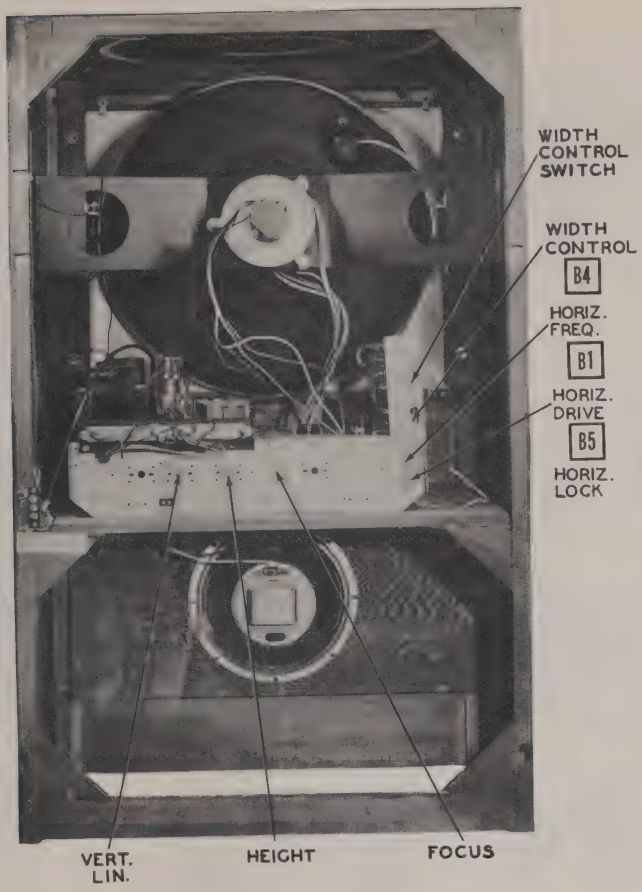
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

Tune in a test pattern and turn horizontal hold control to extreme counter-clockwise position. Picture should remain in synchronization. Turn channel selector switch to another channel and then back to original channel. Normally, the picture should be out of synchronization. Turn the control clockwise and the picture should slowly begin to synchronize and finally lock-in. This should occur when the control is approximately 90° from the extreme counter-clockwise position.

The picture should remain in synchronization for another 90° in the clockwise direction of the control. At the extreme clockwise position the picture should again drop out of synchronization and 3½ to 4½ bars should be seen sloping downward to the right. If the receiver fails to hold synchronization during this check with the hold control at the extreme counter-clockwise position or fails to hold synchronization for at least 60° in the clockwise direction from the point when it drops into "sync" it will be necessary to align the horizontal oscillator circuit as follows:

(A) HORIZONTAL OSCILLATOR ALIGNMENT

Turn horizontal hold control to extreme clockwise position. Tune in a test pattern and adjust trimmer B1 until picture is out of sync and shows 3½ to 4½ bars sloping downward to the right. If the trimmer has insufficient range, set it to its mid-position (one turn from the right) and adjust slug B2 until bars appear.

(B) HORIZONTAL LOCKING ALIGNMENT

Turn the horizontal hold control to full counter-clockwise position. Switch to another channel and back to the original again. Slowly turn horizontal hold control clockwise and note the least number of diagonal bars present just before picture sync. If more than 4½ bars are present just before picture syncs adjust "horizontal lock" trimmer B3 slightly clockwise. If less than 3½ bars are present adjust B3 slightly counter-clockwise and switch channel selector to another channel and back again. Recount bars present at the "lock-in" point. Repeat this procedure until 3½ to 4½ bars are present.

Repeat steps (A) and (B) until conditions exist as outlined under "Horizontal Oscillator Alignment Check".

WIDTH, DRIVE AND HORIZONTAL LINEARITY ADJUSTMENTS

Turn width control B4 to maximum clockwise position. Adjust "horizontal drive" trimmer B5 for maximum brightness and linearity. Adjust horizontal linearity B6 for best linearity in the right half of the picture. Readjust width control until picture fills the mask.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	Video Det. AGC	6AL5	6AL5	6BT	
V8	Video Amp	12AU7	12AU7	9A	
V9	Sound IF Amp	6AU6	6AU6	7BK	
V10	Ratio Det	6AL5	6AL5	6BT	
V11	AF Amp	6AT6	6AT6	7BT	
V12	Audio Output	6K6GT	6K6GT	7S	
V13A	Sync. Limiter-Vert. Osc.	6SR7	6SR7	8Q	
B	Sync. Limiter-Vert. Osc.	6BF6	6BF6	7BT	Used in early models.
V14A	Sync Sep.-1st Sync Amp.	7N7	7N7	8AC	
B	Sync Sep.-1st Sync Amp.	6SN7GT	6SN7GT	8BD	Used in early models.
V15	Vert. Output	6V6GT	6V6GT	7AC	
V16	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6BG6G	6BG6G	5BT	
V18	Damper	5W4GT	5W4GT	4CG	
V19	HV Rect.	1B3GT	1B3GT	3C	
V20	LV Rect	5U4G	5U4G	5T	
V21	Picture Tube	19FP4	19FP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	TCE147-D	AF3X3J2G		UP3D3J		TVL-4811	▲ Filter
B	30	400		25B		1185			▲ Filter
C	125	50							Vert. Output Cath.
C2A	80	450	TCE148-D	AF16J2I6G8D		UP13D7		TVL-4710	▲ Filter
B	10	400				1186			■ Vert. Output Dec.
C	30	300							▲ Filter
D	40	150							Filter
C3	4	25	TCE104-D	PRS150/4		BR350		TVA-1203	Stabilizing Cap.
C4	34	150	TCE112-DA	PRS350/34		BR3035A		TVA-1610	Output Decoupling
C5	4	25	TCE104-D	PRS150/4		BR550		TVA-1203	Hor. Output Cath.
C6	380			GP350M	D6-391		GP2K-360		Ant. Coupling
C7	380			GP360M	D6-391		GP2K-360		RF Cath. Bypass
C8	380			GP360M	D6-391		GP2K-360		RF Fil. Bypass
C9	380			GP360M	D6-391		GP2K-360		RF Decoupling
C10	1				D2-1				RF Coupling
C11	22		CXE21NPO		D3-22		NPOK-22		RF Coupling
C12	5000				D6-502		81L-005	29C1	Mixer Decoupling
C13	360			GP360M	D6-391		GP2K-360		Mixer Fil. Bypass
C14	1				D2-1				Osc. Coupling
C15	4.7		CN4.7DN750				N750K-4.7		Osc. Feedback
C16	4.7		CN4.7DN750				N750K-4.7		Osc. Feedback
C17	360			GP360M	D6-391		GP2K-360		Osc. Fil. Bypass
C18	380			GP360M	D6-391		GP2K-360		RF Bypass
C19	380			GP360M	D6-391		GP2K-360		Fixed Trimmer
C20	270	500	TCM27I-7		D6-271	5W5T2S	GP2K-270	TFM-325	IF Coupling
C21	5000		TCC152-SP		D6-502	1D5D5	81L-005	29C1	RF Bypass
C31	1500		TCC152-SP	GP1500M	D6-152	1W5D15	GP2L-5015	1FM-315	3rd V. IF Dec.
C32	1500		TCC152-SP	GP1500M	D6-152	1W5D15	GP2L-5015	1FM-315	1st V. IF Dec.
C33	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	1st V. IF Fil.
C24	270	500	TCM27I-7	1468-00025	D6-271	5W5T2S	GP2K-270	1FM-325	IF Coupling
C25	1500		TCC152-SP	GP1500M	D6-152	1W5D15	GP2L-5015	1FM-315	AGC Filter
C26	1500		TCC152-SP	GP1500M	D6-152	1W5D15	GP2L-5015	1FM-315	2nd V. IF Dec.
C27	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	2nd V. IF Fil.
C28	22	300	TCP4254-4	P488-25				TC-2	AGC Filter
C29	270	500	TCM27I-7	1468-00025	D6-271	5W5T2S	GP2K-270	1FM-325	IF Coupling
C30	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	RF Bypass
C31	1500		TCC152-SP	GP1500M	D6-152	1W5D15	GP2L-5015	1FM-315	3rd V. IF Dec.
C32	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	3rd V. IF Cath.
C33	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	3rd V. IF Fil.
C34	270	500	TCM27I-7	1468-00025	D6-271	5W5T2S	GP2K-270	1FM-325	IF Coupling
C35	5	500	TCC050-S	1468-000005	D2-4.7	2R5Y5	NPOK-5	MS-55	Fixed Trimmer
C36	470		TCE361-10	GP470M	D6-471	5W5T5	GP2K-470	1FM-35	IF Coupling
C37	5000		TCP502-10	BPD-5	D6-502	1D5D5	81L-005	29C1	DAGC Decoupling
C38	.05	600	TCP503-05	P888-05			PTE4S	TM-15	Video Coupling
C39	6	500	TCC050-7	1468-000005	D2-6.8	5W5Y5	GP1K-5	MS-55	V. Diode Filter
C40	.05	600	TCP4503-10	P888-05			PTE4S	TM-15	Video Coupling
C41	4700		TCC472-7	GP4700M	D6-472	1D5D5	GP2M-0047	1FM-25	2nd V. Amp. Cath.
C42	1000			GP1000M	D6-102	1W5D1	GP2L-001	1FM-21	Fixed Trimmer †
C43	.25	400	TCP254-4	P488-25				TC-2	Pic. Tube Cath. Byp.
C44	2.2		TCC2.2-7		D2-2.2				S. IF Coup.
C45	.01	600	TCPM03-4	P888-01	D6-103	PTE8S1	81L-01	TM-11	S. IF Decoup.
C46	.25	400	TCP254-4	P488-25				TC-2	S. IF Cath.
C47A	3000		TCC3-1	GP3000M	D6-302	1W5D2	883-2 x 003	29C5	Diode Load Cap. *
B	3000			GP3000M	D6-302	1W5D2			Diode Load Cap. *
C48	1500		TCC152-7	GP1500M	D6-152	1W5D15	GP2L-001	1FM-315	De-emphasis
C49	.002	600	TCP203-10	P888-002	D6-202	PTE8D2	GP2M-002	TM-23	Audio Coupling
C50	.01	600	TCPM03-10	P888-01	D6-103	PTE8S1	81L-01	TM-11	Audio Coupling
C51	.0022	600	TCPM203-10	P888-0022	D6-222	PTE8D2	GP2M-0022	TM-22	De-emphasis
C52	.01	600	TCPM03-4	P888-01	D6-103	PTE8S1	81L-01	TM-11	Audio Coupling
C53	.005	600	TCPM503-10	P888-005	D6-502	PTE8D5	81L-005	TM-25	Output Plate Bypass
C54	.05	600	TCPM503-10	P888-05		PTE8S5		TM-15	Sync. Coupling
C55	100	500	TCM10I-7	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Sync. Coupling
C56	390	500	TCM39I-7	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Sync. Amp. Cath.
C57	.002	600	TCP203-10	P888-002	D6-202	PTE8D2	GP2M-002	TM-22	Integrator Net.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	.005	600	TCP502-10	P888-005	D6-502	PTE8D5	81L-005	TM-25	Integrator Net.
C59	.0047	400	TCM47S-8	P888-0047	D6-472	PTE8D5	GP2M-0047	TM-25	Vert. Osc. Grid
C60	.01	400	TCM10S-4	P488-01	D6-103	PTE4S1	81L-01	TM-11	Vert. Osc. Grid
C61	.25	1000	TCP254-10-SP	1084-25					Decoupling
C62	.05	600	TCP503-10	P688-05		PTE8S5		TM-15	Vert. Discharge
C63	.25	400	TCPM254-4	P488-25		GT4P2S		TC-2	Vert. Sweep Coupling
C64	120	500	TCM12I-7	1468-00015	D6-121	5W5T1S	GP2K-120	1FM-315	Hor. Sync. Coupling
C65	120	500	TCM12I-7	1468-00015	D6-121	5W5T1S	GP2K-120	1FM-315	Voltage Divider
C66	.002	600	TCP203-10	P688-002	D6-202	PTE8D2	GP2M-002	TM-22	Hor. Sync. Coupling
C67	.25	400	TCP254-4	P488-25		GT4P2S		TC-2	AFC Filter
C68	.02	400	TCP203-4	P488-02				TM-12	AFC Filter
C69	.05	600	TCP503-10	P688-05		PTE8S5		TM-15	Hor. AFC Plate Byp.
C70	180	500	TCM18I-29	1468-0002	D6-181	5W5T2	GP2K-180	1FM-32	Hor. Osc. Grid
C71	2200		TCM222-14		D6-222		GP2M-0022		Hor. Discharge
C72	680	1000	TCM68I-13						Hor. Sweep Coupling
C73	.25	1000	TCP254-10-SP	1084-25					Decoupling
C74	.1	1000	TCP104-13	1084-1					Hor. Output Screen
C75	.035	1000	TCP353-13	P1088-033					Damper Filter
C76	.05	1000	TCP503-13	P1088-05					Damper Filter
C77	5	1500	TCM050-20			GT6S5		TR-15	Hor. Feedback
C78	.05	600	TCP503-10	P688-05		PTE8S5		TM-15	Fixed Trimmer †
C79	500	20000	TCC501-4-SP-D		TV3-502				HV Filter
C80	.01	400	TCP103-10	P488-01	D6-103	PTE4S1	81L-01	TM-11	Line Filter
C81	.01	400	TCP103-10	P488-01	D6-103	PTE4S1	81L-01	TM-11	Line Filter

* When either item C47A or C47B are replaced, replace both with capacitors of equal value.
† Some models use 1000MMF in this application.
† Not used in all models.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5 Meg.		Concentrikit			
B	50KΩ	TVC-523-D	Bil-138 *	RTV-63	SBB-640	Vert. hold control-front
C	Shaft End		Bil-123 *			Horiz. hold control-rear
R2A	500KΩ	TVC-526-1D	E-187 *	AM-60-Z	B-60-S	Attach per instr. in "Concentrikit".
B	Shaft	Not Req.	Not Req.	FS-3	Not Req.	Volume control
C	Switch	Not Req.	T6-1	SW-A	Not Req.	Attach to R2A per instructions
R3A	1.5KΩ	TVC-524-D		RTV-62	SBB-641	Attach to R3A per instructions
B	500KΩ					Contrast control-front
C	Shaft	TVC-503-1D	QU1-114	AM-19-S	AN-10	Brightness control-rear
R4A	5000Ω		RQ	FKS-1/4	AK-1	Vert. linearity control
B	Shaft	Not Req.	Not Req.	AM-84-S	AN-83	Attach to R4A per instructions
R5A	2.5 Meg.	TVC-504-1D	QU1-239	RTV-64	AK-1	Height control
B	Shaft	Not Req.	RQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6	2250Ω	TVC-506-1D		RTV-9	SVS-926	Focus control-Wire Wound

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED
R7	56Ω 10%	½	TRC560-2		RF Amp. Cathode
R8	330Ω 10%	½	TRC331-2		RF Amp. Cathode
R9	1000Ω	½	TRC102-1	BTS-1000	RF Amp. Decoupling
R10	4700Ω 5%	½	TRC472-3	BTS-4700	RF Coil Shunt
R11	1 Meg.	½	TRC105-1		Mixer Grid
R12	1000Ω	½	TRC102-1	BTS-1000	Mixer Decoupling
R13	47Ω	½	TRC470-1		Osc. Cathode
R14	27KΩ	½	TRC273-1		Osc. Grid
R15	27KΩ	½	TRC273-1		Osc. Grid
R16	1000Ω	½	TRC102-1	BTS-1000	Osc. Plate Load
R17	39000Ω 10%	½	TRC393-2	BTS-3900	1st Video IF Grid
R18	39Ω	½	TRC390-1		1st Video IF Cathode
R19	1000Ω	½	TRC102-1	BTS-1000	1st Video IF Decoupling
R20	330Ω	½	TRC331-1		AGC Network
R21	330Ω	½	TRC331-1		AGC Network
R22	390Ω 10%	½	TRC390-2		2nd Video IF Cathode
R23	1000Ω	½	TRC102-1	BTS-1000	2nd Video IF Decoupling
R24	10KΩ 10%	½	TRC103-2		3rd Video IF Coil Shunt
R25	100Ω	½	TRC101-1		3rd Video IF Cathode
R26	1000Ω	½	TRC102-1	BTS-1000	3rd Video IF Decoupling
R27	560KΩ	½	TRC564-1	BTS-560K	AGC Network
R28	120KΩ	½	TRC124-1	BTS-120K	AGC Diode Load
R29	1500Ω	½	TRC152-1	BTS-1500	Voltage Divider
R30	8200Ω 10%	½	TRC822-1	BTS-8200	Video Det. Diode Load
R31	1 Meg.	½	TRC105-1	BTS-1 Meg.	1st Video Amp. Grid
R32	33000Ω 10%	½	TRC332-5	BTA-3300	1st Video Amp. Plate Load
R33	1 Meg.	½	TRC105-1	BTS-1 Meg.	2nd Video Amp. Grid
R34	470Ω 10%	½	TRC470-2	BW-½-47	2nd Video Amp. Cathode
R35	33000Ω 10%	½	TRC332-5	BTA-3300	2nd Video Amp. Plate Load
R36	820Ω 10%	½	TRC821-2	BTS-820	2nd Video Amp. Plate Load
R37	47KΩ	½	TRC473-1	BTS-47K	Voltage Divider
R38	100Ω	½	TRC101-1		Sound IF Cathode
R39	1000Ω	½	TRC102-1	BTS-1000	Sound IF Decoupling
R40	220Ω	½	TRC221-1		Balancing
R41	220Ω	½	TRC221-1		Balancing
R42	5.1Ω	½	TRC5IA-1		Ratio Det. Filament Dropping
R43	15KΩ 10%	½	TRC153-2	BTS-15K	Ratio Det. Diode Load
R44	15KΩ 10%	½	TRC153-2	BTS-15K	Ratio Det. Diode Load
R45	47KΩ	½	TRC473-1	BTS-47K	De-emphasis
R46	10 Meg.	½	TRC106-1	BTS-10 Meg.	AF Amp. Grid
R47	330KΩ	½	TRC334-1	BTS-330K	AF Amp. Plate Load
R48	470KΩ	½	TRC474-1	BTS-470K	Output Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R49	1000Ω	1	TRC102-4	BTA-1000	Output Decoupling
R50	1 Meg.	½	TRC105-1	BTS-1 Meg.	Sync. Amp. Grid
R51	15KΩ	½	TRC153-4	BTA-15K	Sync. Amp. Plate Load
R52	3.9 Meg.	½	TRC395-1	BTS-3.9 Meg.	Sync. Amp. Grid
R53	6800Ω	½	TRC682-1	BTS-6800	Sync. Amp. Cathode
R54	22KΩ	½	TRC223-1	BTS-22K	Integrator
R55	8200Ω	½	TRC822-1	BTS-8200	Integrator
R56	1 Meg. 10%	½	TRC105-1	BTS-1 Meg.	Vert. Osc. Grid
R57	220KΩ	½	TRC224-1	BTS-220K	Vert. Osc. Plate Load
R58	56KΩ	½	TRC563-1	BTS-56K	Decoupling
R59	4700Ω	½	TRC472-1	BTS-4700	Vert. Peaking
R60	2.2 Meg.	½	TRC225-1	BTS-2.2 Meg.	Vert. Output Grid
R61	1500Ω	½	TRC152-1	BTS-1500	Vert. Output Cathode
R62	1000Ω	½	TRC102-1	BTS-1000	Vert. Output Decoupling
R63	560KΩ 5%	½	TRC564-3	BTS-560K-5%	Hor. AFC Grid
R64	180KΩ 10%	½	TRC184-2	BTS-180K	Horiz. AFC Cathode
R65	100KΩ 5%	½	TRC104-6	BTA-100K-5%	Hor. AFC Cathode
R66	8200Ω 10%	½	TRC822-2	BTS-8200	Hor. AFC Filter Network
R67	3.3 Meg. 5%	1	TRC335-6	BTA-3.3 Meg. 5%	Voltage Divider
R68	30KΩ	½	TRC303-12		Voltage Divider-Temperature Compensation
R69	120KΩ	1	TRC124-1	BTS-120K	Voltage Divider
R70	270KΩ 10%	½	TRC274-2	BTA-270K	Voltage Divider
R71	100KΩ	1	TRC104-1		Hor. Osc. Grid-Temperature Compensation
R72	100KΩ 10%	½	TRC104-5	BTA-100K	Hor. Osc. Plate Load
R73	150KΩ 10%	½	TRC154-2	BTS-150K	Hor. Feedback
R74	560KΩ	½	TRC564-1	BTS-560K	Hor. Feedback
R75	47Ω	½	TRC470-1		Parasitic Suppressor
R76	1 Meg.	½	TRC105-1	BTS-1 Meg.	Hor. Output Grid
R77	82Ω	1	TRC820-4	BW-1-82	Hor. Output Cathode
R78	470Ω	½	TRC471-1	BTS-470	Hor. Output Screen Dropping
R79	10KΩ	½	TRC103-1	BTS-10K	Decoupling
R80	3.3Ω 10%	½	TRC33A-1		HV Rect. Fil.
R81	470KΩ 10%	1	TRC474-5		HV Filter
R82	18Ω 10%	2	TRC180-8	BW-2-18	Filter Network
R83	120Ω	2	TRC18I-7	BW-2-120	Focus Coil Shunt
R84A	1125Ω	9.8			Filter-Wire Wound
B	8200Ω	2.3	TRP-17DA		Filter-Wire Wound
C	650Ω	10.1			Bias Network-Wire Wound
R85	220Ω	½	TRC-221-1	BW-½-220	Voltage Divider
R86	30Ω 5%	2		BW-2-33-5%	Bias Network-Wire Wound
R87	82Ω 10%	2	TRC820-8	BW-2-82	Bias Network-Wire Wound
R88	22KΩ	½	TRC223-1	BTS-22K	Voltage Divider
R89	100KΩ	½	TRC104-1	BTA-100K	Voltage Divider
R90	10KΩ 10%	½	TRC103-1	BTS-10K	Horiz. Osc. Transformer Shunt

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ② 2.1	720VCT .250ADC	5VAC ② 3A	6.3VAC ② 1.8A SEC. 4 6.3VAC ② 7A	TTR188-D	P-3067	P-8159 P-5014 ①	TP-360 ③

① Mount under chassis and use for SEC. #3
③ Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	145Ω	1360Ω	TTR161-2-D	A-8111	A-3000	TB0-1	Vert. Block Osc. Trans.
T3A	480Ω	11Ω	TTR210-D		HVO-6		Hor. Output Trans.
	Tap ②	Tap ②					
	125Ω	.50 & 8.5Ω					
		SEC 2					
		0Ω					
B			TTR209-D				Hor. Output Trans. (Alt)
T4	1100Ω	10Ω	TTR185-D	A-8112	A-3036	TSO-5 ②	Vert. Output Trans.
T5A	14Ω		TTR20I-D	DY-7	MD-70F		Hor. Deflection Coil
B	62Ω						Vert. Deflection Coil
T6	480Ω		TLF522-1D		MF-2		Focus Coil

② Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	5000Ω	3.2Ω	390Ω	.4Ω	TTR179-D	A-3877	A-2930	RO-8 ②	② Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
			TELE-TONE	VIKING	QUAM	
	FIELD RES.	V. C. IMP.	PART No.	PART No.	PART No.	
SP1	PM	3.3Ω	TSP465-D	10J12	10A31	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250ADC	37Ω	1 Henry	TTR106-2D	C-2326 ②	C-2996 ②	TR-3300 ②	② Drill one new mounting hole.

COILS (RF-IF)

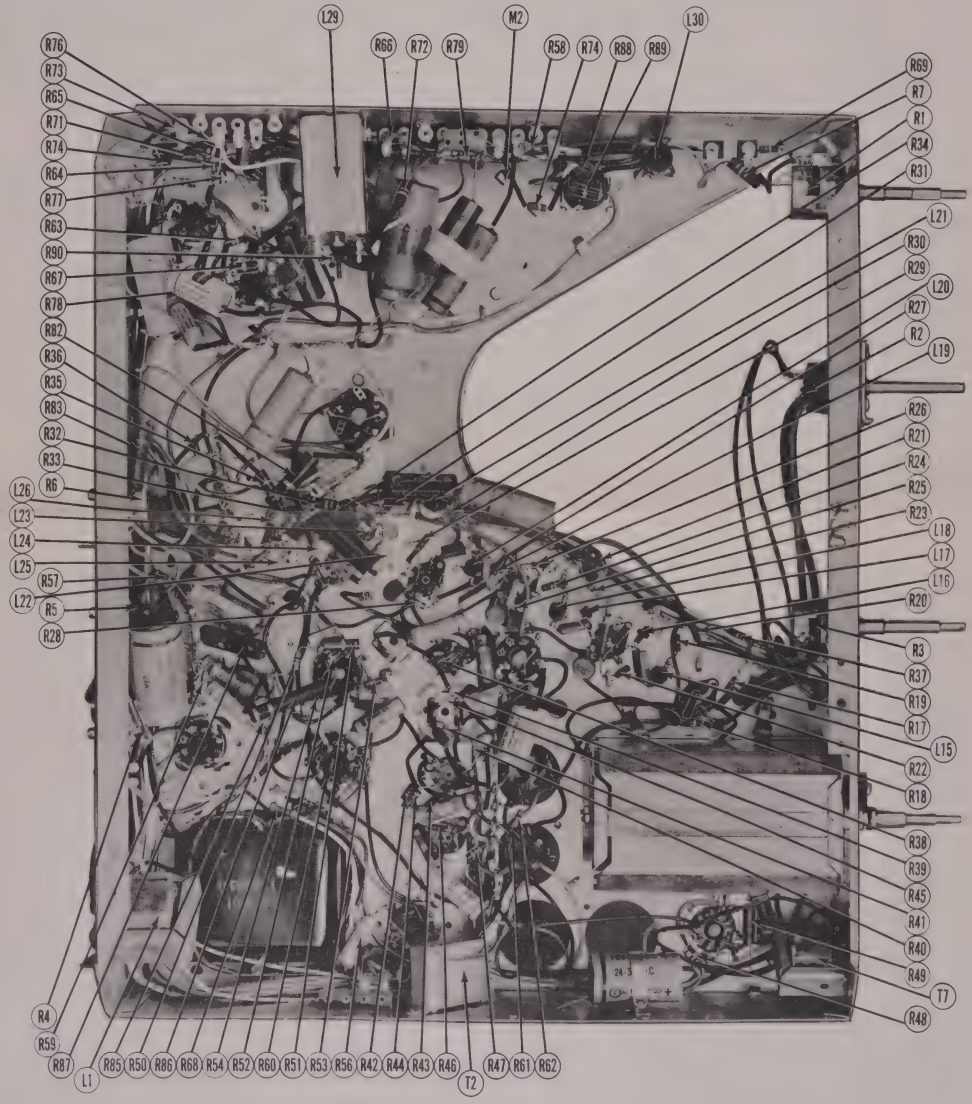
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω				
L3	RF Choke	3Ω				
L4	RF Coil	0Ω		TLF143-D		Channel 6
L5	Mixer Grid	0Ω		TLF143-D		Channel 6
L6	Osc. Coil	0Ω		TLF120-1D		Channel 2
L7	Osc. Coil	0Ω		TLF120-3D		Channel 4
L8	Osc. Coil	0Ω		TLF120-5D		Channel 6
L9	Osc. Coil	0Ω		TLF120-7D		Channel 8
L10	Osc. Coil	0Ω		TLF120-9D		Channel 10
L11	Osc. Coil	0Ω		TLF120-10D		Channel 12
L12	Osc. Coil	0Ω				Channel 13
L13	RF Choke	2Ω				
L14	1st Video IF	.5Ω		TLF551-D		
L15	2nd Video IF	.1Ω		TLF517-D		
L16	RF Choke	1.5Ω		TLF146-D		
L17	RF Choke	1.5Ω		TLF146-D		
L18	3rd Video IF	.1Ω		TLF148-D		
L19	RF Choke	1.5Ω		TLF146-D		
L20	4th Video IF	.1Ω		TLF149-D		
L21	Peaking	6.2Ω				36 microhenries
L22	Peaking	5.4Ω		TLF502	19-1921 *	Wound on 22KΩ resistor, 120 microhenries
L23	Peaking	4.8Ω		TLF519-D	19-1920	100 microhenries, red dot
L24	Peaking	9.8Ω		TLF503		36 microhenries, orange dot
L25	Sound Trap	1Ω		TLF525-D		
L26	Peaking	5.2Ω			19-1921	120 microhenries, blue dot
L27	Sound IF	1Ω		TLF114-D		
L28	Ratio Det. Trans.	6Ω	1.4Ω	TLF142-D		Alternate part #TLF531-D
L29	Horiz. Osc.	120Ω		TTR157		Tap at 33Ω
L30	Horiz. Lin.	36Ω		TLF506		
L31	Width Coil	.4Ω		TLF533-D		

* Parallel with 22KΩ resistor.

MISCELLANEOUS

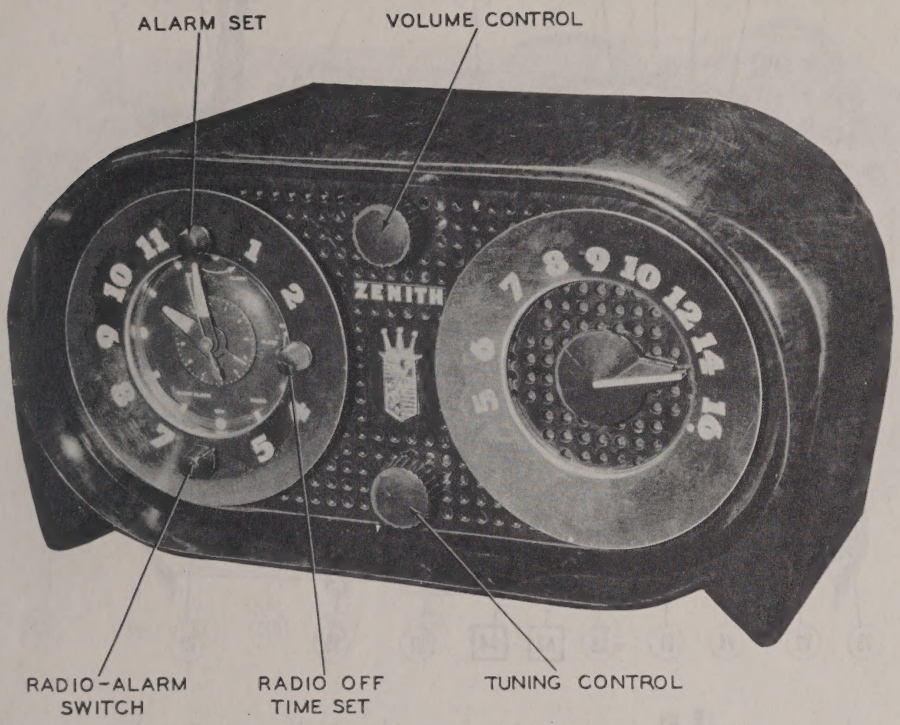
ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M1	RF Tuner		
M2	Fuse		.25A 250V Type GJV
M3	Switch		Width control
M4	Ion Trap	TLF554-D	
	Trimmer	TAS501-D	Horiz. drive 40-370MMF, Horiz. freq. 40-370MMF, Horiz. range 10-160MMF
	Antenna	TBP539-D	Built-in
	Safety Glass	TMP167-D	With mask
	Cabinet	TCB277-DW	Walnut
	Cabinet	TCB277-DM	Mahogany
	Grill Cloth	TGR150-DA	Walnut
	Grill Cloth	TGR158-D	Mahogany
	Knob	TKN117-D	Channel selector
	Knob	TKN115-D	Inside
	Knob	TKN114-D	Outside
	Knob	TKN116-D	Dual

FINE TUNING DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW- RESISTOR AND INDUCTOR IDENTIFICATION

ZENITH
MODEL G516 (Ch. 5G03)



ZENITH MODEL G516

TRADE NAME	Zenith, Model G516 (Ch. 5G03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL G516

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-2202	AFH844D		UP6215		TVL-2432	■ Filter
B	20	150							▲ Filter
C2	10000		22-3	BPD-01	DD-103	PTE4S1	811-01	36C1	RF Coupling
C3	.05	200	22-829	P288-05	DF-503	PTE4S5		TM-15-2	AVC Filter
C4	220	500	22-182	1468-0002	D6-221	5W5T2	GP2K-220	1FM-32	Osc. Grid Cap.
C5	100	500	22-5	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C6	10000		22-3	BPD-01	DD-103	PTE4S1	811-01	36C1	Audio Coupling
C7	470	500	22-6	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	AF Amp. Plate Byp.
C8	10000		22-3	BPD-01	DD-103	PTE4S1	811-01	36C1	Audio Coupling
C9	.02	400	22-1379	P488-02	DF-203	PTE4S2		TM-12-4	Output Plate Byp.
C10	.05	200	22-829	P288-05	DF-503	PTE4S5		72P51	Line Isolation
C11	.05	400	22-1017	P488-05	DF-503	PTE4S5		TM-15-4	Line Filter

CONTROLS

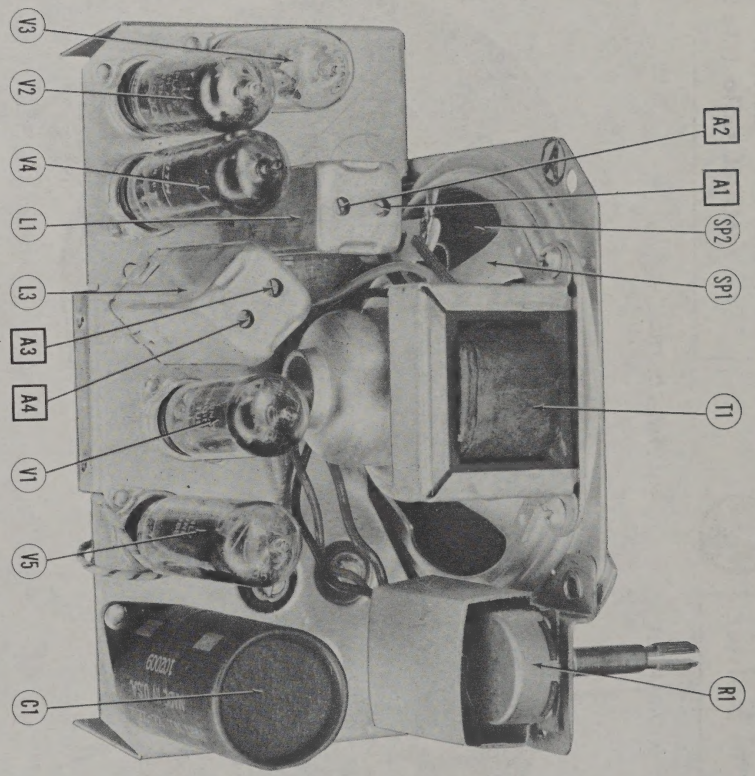
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA CLAROSTAT PART No.	REPLACEMENT DATA CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	$\frac{1}{2}$	63-2106	Q11-137	AG-61-S		Volume control
B	Shaft		Not Req.	Not Req.	KSS-3		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R2	1 Meg.	$\frac{1}{2}$	63-1912	BTS-1 Meg.	Conv. Grid
R3	10KΩ	$\frac{1}{2}$	63-1828	BTS-10K	Osc. Grid
R4	150Ω	$\frac{1}{2}$	63-1751	BTS-150	IF Amp. Cathode
R5	2.2 Meg.	$\frac{1}{2}$	63-1926	BTS-2.2 Meg.	AVC Network
R6	4.7 Meg.	$\frac{1}{2}$	63-1940	BTS-4.7 Meg.	AF Amp. Grid
R7	510KΩ	$\frac{1}{2}$	63-1898	BTS-470K	AF Amp. Plate-See Note 1
R8	510KΩ	$\frac{1}{2}$	63-1898	BTS-470K	Output Grid-See Note 1
R9	150Ω	1	63-1977	BTA-150	Output Cathode
R10	1000Ω	1	63-1574	BTA-1000	Filter
R11	22Ω	$\frac{1}{2}$	63-1219	BW-$\frac{1}{2}$-22	Surge Limiter-Wire Wound

Note 1. Some models use a 470KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	2600Ω	3.5Ω	180Ω	.6Ω	206-680	A-3876	A-3025 ①	RO-2	① Drill one new mounting hole.

SPEAKER

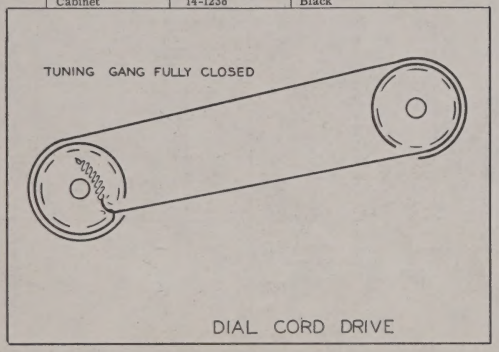
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH	JENSEN	QUAM	
	FIELD	V. C. IMP.	PART No.	PART No.	PART No.	
SP1	PM	3.5Ω	49-680	ST-113 ② MOD. P4-X	4A07 ②	② Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"	208-680			

R F COILS

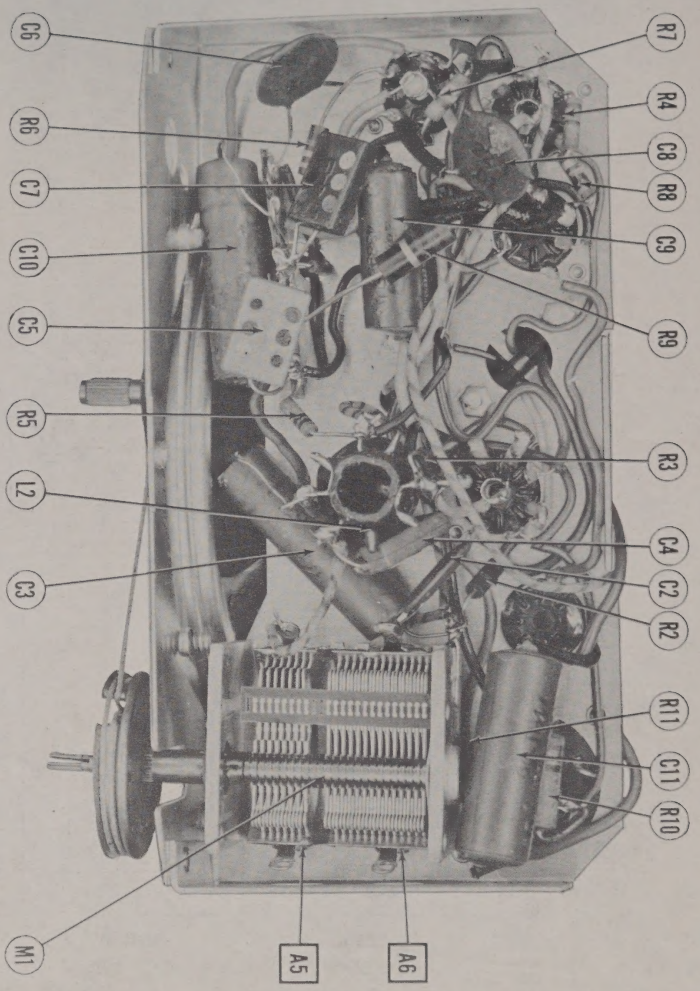
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.4Ω		S-16729		Dark (S-16776 for white cabinets)
L2	Osc. Coil	.8Ω	7.5Ω	S-16681		
L3	1st IF	11Ω	11Ω	95-1230		
L4	2nd IF	11Ω	11Ω	95-1231		

MISCELLANEOUS

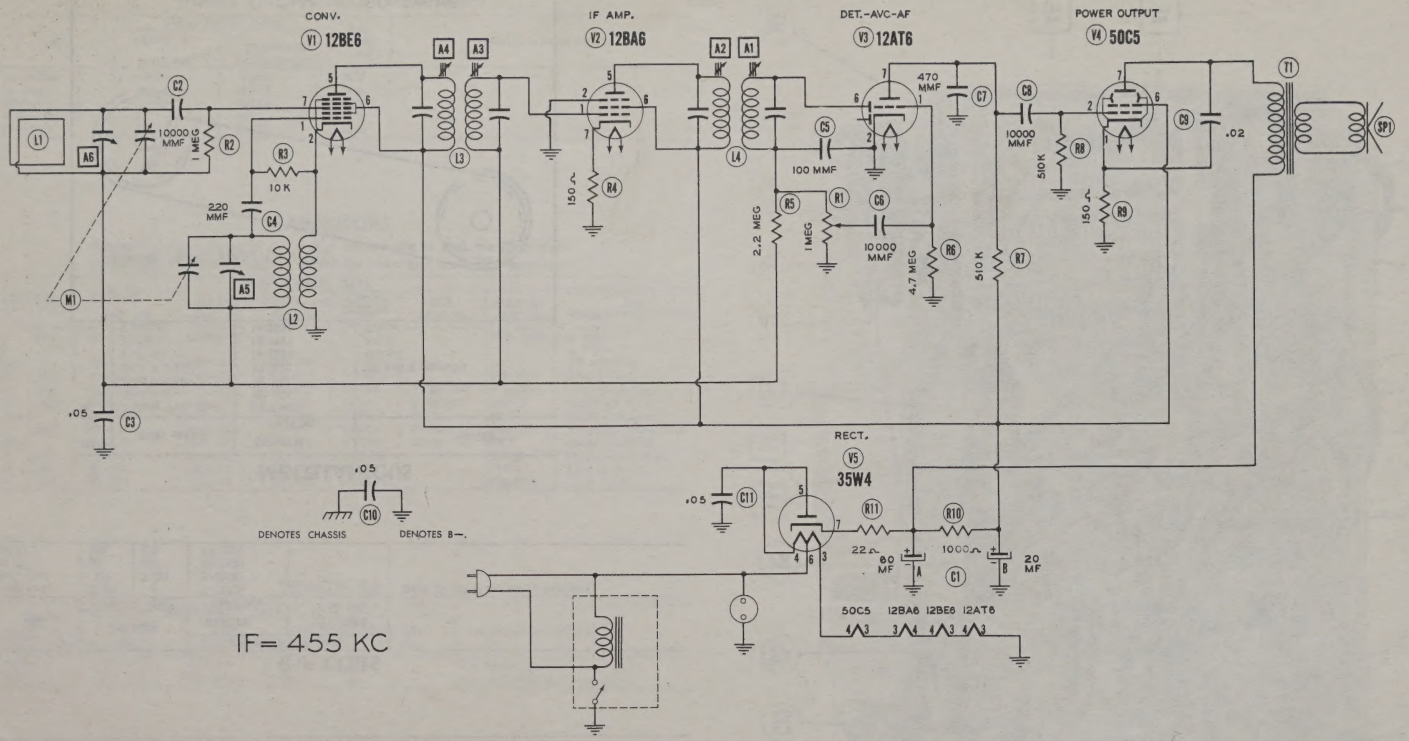
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	2 Gang Var. Cap.	22-2209	
	Dial Scale	26-444	
	Dial Pointer	59-244	
	Dial Pointer	59-246	(W and Y Models)
	Cabinet	14-1234	Walnut
	Cabinet	14-1237	White
	Cabinet	14-1238	Black



CHASSIS—BOTTOM VIEW



ZENITH MODEL G516



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-5.2VDC	0V.	12VAC	23VAC	85VDC	85VDC	-.1VDC
V 2	12BA6	-.1VDC	0V.	35VAC	23VAC	85VDC	85VDC	1VDC
V 3	12AT6	-.5VDC	0V.	0V.	12VAC	0V.	-.6VDC	35VDC
V 4	50C5	5.8VDC	0V.	35VAC	85VAC	0V.	85VDC	100VDC
V 5	35W4	0V.	0V.	85VAC	107VAC	107VAC	117VAC	110VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	10KΩ	.8Ω	13Ω	25Ω	†1000Ω	†1000Ω	4.2 Meg.
V 2	12BA6	3.2 Meg.	0Ω	36Ω	25Ω	†1000Ω	†1000Ω	150Ω
V 3	12AT6	4.7 Meg.	0Ω	0Ω	13Ω	Inf.	1 Meg.	†510KΩ
V 4	50C5	150Ω	510KΩ	36Ω	90Ω	510KΩ	†1000Ω	†200Ω
V 5	35W4	Inf.	Inf.	90Ω	112Ω	112Ω	108Ω	2 Meg.

† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.